

# **Methods to Assess Prey Abundance for Possible Wolf Reintroductions on the Olympic Peninsula, Washington, Using DNA from Pellets.**

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## INTRODUCTION

There has been a growing interest in the question of whether to establish a gray wolf (Canis lupus) population on the Olympic Peninsula in Washington State. Prior to the twentieth century wolves were common residents of the Olympic Peninsula (Scheffer 1995). The historical record indicates that by the 1930's or 1940's Olympic Peninsula wolves were likely extinct. The last verified record occurred in 1930's (Scheffer 1995). Today approximately 25% of the peninsula (approximately 3,600 km<sup>2</sup>) is within Olympia National Park) is in the same general condition that existed when wolves were present 100 years ago. However, since the early 1900's the majority of the peninsula landscape outside of the park (~ 12,000 km<sup>2</sup>) has been managed as commercial timberlands and has changed considerably since wolves were last reported on the peninsula.

The large scale changes to the landscape, the uncertain associated effects on any potentially reintroduced wolf population, and a recognized lack of biological information on prey species known to occur on the peninsula, led the U.S. Congress to appropriate funds in 1998 to the U.S. Fish and Wildlife Service to investigate the possibility of reintroducing wolves on the peninsula. In March 1998 the U.S. Fish and Wildlife Service contracted with the University of Idaho to examine the biological feasibility of restoring wolves to their former range on Washington's Olympic Peninsula (Ratti *et al.* 1999). One

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problem facing the feasibility analysis was that there was virtually no quantitative information available on the abundance and densities of the likely prey species, Roosevelt elk (*Cervus elaphus roosevelti*) and black-tailed deer (*Odocoileus hemionus columbianus*), for the peninsula. This was particularly true of black-tailed deer populations both inside and outside of the Olympic National Park. Recognizing this limitation, the U.S. Congress House Report of the Appropriations Committee stated: “these funds should permit the necessary review and research and priority focus should be placed on prey base studies ”.

Although much of the attention so far has centered on the ability of the Olympic National Park to support wolves, there is a need to look at the landscape outside of the park to evaluate wolf reintroductions. Probably the most important reason to consider non-park land as important in determining the likelihood of a successful reintroduction is that almost all (~90%) of the Peninsula-wide winter range of potential prey, (i.e. deer and elk), exists outside of the Olympic National Park boundary. Most of Olympic National Park is over 750 meters in elevation, which is a defining typical winter range for deer and elk on the peninsula (Jenkins *et al.* 1999, Ratti *et al.* 1999). In contrast, non-park land that surrounds the Park is at much lower elevation. Most of the area outside of the Park is below 500 meters in elevation.

Historically abundance estimations of deer in western Washington have ranged from 5-150 deer /sq mile, depending on the local habitat conditions in the surrounding landscape (Ratti *et al.* 1999, Raedeke 1986, Brown 1961). In spite of the fact that black-tailed deer are the most abundant ungulate on the peninsula no method exists for accurately determining the size of the deer population with an adequate level of precision (Raedeke 1993). Western Washington and in particular the Olympic Peninsula receives substantial annual rainfall (over 300 cm) which translates to rapid and heavy growth of underbrush. The presence of the underbrush and dense forest canopy make it especially difficult to directly observe deer. Traditional techniques used to monitor deer have included spotlighting transects, composition counts from deer observed while driving, and in some cases pellet counts.

However the most important and consistent method used to monitor the deer population has relied on the estimated annual number of deer killed during the fall hunting season. Even the most quantitative approach to analyzing deer harvest numbers, at best, provides only an index to changing trends in the population, not reliable estimates of the absolute abundance of black-tailed deer on the peninsula. The scope of this project is to evaluate the feasibility of using DNA genotyping from deer pellets collected along random transects to determine an unbiased estimate of the population abundance of black-tailed deer on the Olympic Peninsula.

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The original objectives of this study were to 1) develop a population estimation technique for black-tailed deer in dense forest of western Washington, and 2) determine the abundance and distribution of black-tailed deer on the Olympic Peninsula outside of the Olympic National Park (ONP).

#### *Acknowledgements*

The U.S. Fish and Wildlife Service funded this study. Washington Department of Fish and Wildlife provided housing in the field and use of vehicles during field collection. A great big thanks goes to the field crew responsible for running the transects and collecting deer pellets across difficult terrain and in the kind of wet weather the Olympic Peninsula is known for. Brett Lyndaker led the crew and did a great job organizing the data and getting it ready for analysis. Joann Wisniewski, Clay Fletcher, and Cheryl Leach contributed tireless energy in the field without which successful pellet collection could not have occurred. Kurt Jenkins and Patti Happe provided logistical support and shared radio-telemetry movement data of black-tailed within Olympic National Park. Helmut Zahn provided field supervision. Jennifer Fangman and Kathleen Hunt provided lab assistance.

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## METHODS

### *Sample Collection*

Two teams of two people each were deployed to sample up to three different habitat strata on the peninsula that represent *a priori* estimates of different deer densities and/or sightability coefficients. A total of 12 one square mile subareas (geographic strata) were selected to serve as the basic landscape unit used to estimate deer densities (Skalski 1994). Each plot was divided into 32 evenly spaced points for starting transects along western and eastern edges of each plot and 32 evenly spaced starting points for transects along north and south edges of each plot.

Selected transect starting points were determined at random. Observers used GPS units to locate transect starting points and were instructed to follow a N-S or E-W line as much as possible, circumventing steep cliffs or waterways as encountered (Figure 2). Our goal was to collect a minimum of 40 pellet groups in each subarea (20 from north-south transects, and 20 from east-west transects). Each pellet group was classified into one of two age-classes, based on a subjective assessment of moisture content, color, and overall appearance. Zero to 2 days old pellets were firm and characterized by green/brown color both external and internal material. Pellets classified as 3-7 days old were brown in color both internal and external, were pliable squishy but not crumbly when pressed. Pellets that were encountered and thought to be older than 7 days were not recorded. Crews were

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trained before conducting surveys in order to calibrate pellet classification among field observers. Pellets were collected during March and April of 1998. Field crews wore latex gloves when collecting pellets, placing pellets in plastic bags. Bags were placed in freezer in each night after collection. At end of field season pellet bags were transferred to genetics lab for extraction and PCR amplification.

Deer pellets collected from one set of transects were used to initially identify known individual deer from each of the subareas. Deer pellets collected during the perpendicular set of transects were used to represent “recaptures” of previously “marked” deer (from the first team) and additional “unmarked” deer. In order to increase probability that the sampled population is closed during the sampling period, only fresh pellets (estimated at less than seven days old) were used in this analysis.

Radio-collared deer from another study conducted by the Olympic National Park (Jenkins *et al.* 1999) were used to intensively monitor daily movements by black-tailed deer during winter. Daily movement data from these deer were used to evaluate the assumption that the deer that dropped the pellets collected were likely still in the square mile subarea sampled over the assumed 7 day pellet deposition period.

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Line transect methods (Buckland *et al.* 1993) were used as independent estimate of deer densities within the same subareas sampled using DNA mark-recapture methods. Pellet data were analyzed using Program Distance, version 2.1(Laake *et al.* 1994). Pellet densities were estimated for each sample plot.

GIS analysis of Washington GAP data (Cassidy 1997) was used to stratify subareas selected by broad classes of forest overstory condition (early, mid, and late sere). We assumed subareas dominated by early sere vegetation would have the highest deer densities and therefore were sampled (n=6) in greater proportion than subareas dominated by mid (n=4) and late successional (n=2) overstory forests (Table 1).

Of the approximately 9,200 km<sup>2</sup> of habitat outside of the Olympic National Park, there were 1,718 km<sup>2</sup> classified as mid-sere and 1,431km<sup>2</sup> classified as late-sere forest canopy. The remaining ~6,000 km<sup>2</sup> of the study area was categorized as early-sere community. As it turned out the scale of the GAP information did not track well with what we saw on the ground so we also recorded the actual vegetation cover type along each transect as it was encountered. Changes in cover type along each transect were noted. Pellet density estimates were then made for each of the different habitats (early, mid, or late sere) found along the transects.

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In order to develop baseline frequencies of allele distribution at each locus we collected tissues samples from individual black-tailed deer. We focused black-tailed deer collection efforts in two heavily hunted deer areas in Game Management Unit 667 (Vail) and GMU 603 Pysht (Figure 1) on the Olympic Peninsula. Successful hunters voluntarily brought deer to established WDFW check stations where biologists cut off a small portion of the deer's tongue. The size of the tissue approximated the size of an eraser on a pencil. The tissue was placed in 100% ethanol and transfer to the WDFW genetics laboratory in Olympia.

### *Protocol Development*

#### Microsatellites

A total of 15 microsatellite primer sets from the literature were evaluated for use on this study. Protocols were developed using DNA isolated from blood of six known black-tailed deer in Washington. Primer sets were first tested for robust amplification and analyzed on silver stained 15% acrylamide gels. The eight most heterozygous of the 15 primer sets were fluorescently labeled and tested with control blood and pellet fecal DNA and analyzed by capillary electrophoresis (ABI 310). From these, we selected the six microsatellite primers with robust PCR amplification and large allelic variability: CRSP-

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1 (Engel *et al.* 1996, Arevalo and et al. 1994), Texan4 (Engel *et al.* 1996, Holder and et al. 1994), RT-5 (Wilson *et al.* 1997), Cal-M, Cal-O and Cal-D (Levine *et al.* 1998).

CRSP-1, Texan-4 and RT-5 are di-nucleotide repeats and Cal-M, Cal-O and Cal-D are tetra-nucleotide repeat microsatellites. We also used two primer-pairs to determine gender: SRY-41F, SRY-121R, ZFX/Y P1-5EZ, ZFX/Y-Sch (Woods *et al.* 1999). All protocols were originally developed at the conservation genetics laboratory of S. Wasser. In early 2000 we switched to the WDFW lab and redesigned many of the PCR protocols to calibrate to the new lab equipment.

DNA was extracted from the tongue tissue (collected at hunter check stations) using 5% Chelex-100 suspension (see Appendix C; (Walsh *et al.* 1991)). A small piece of the preserved tongue tissue (approximately 2 mm<sup>2</sup>) was placed in 200 @L of 5% Chelex-100 suspension with 2 @L of Proteinase K. The tissue/suspension mix was incubated at 65°C until the tissue was digested entirely (30 minutes to several hours). Following digestion the mix was heated to 95°C for five minutes and then centrifuged to pellet the chelex beads and any undigested material. The supernatant was removed and frozen as storage stock. The working stock used in all subsequent PCR reactions was constituted by combining the storage stock and sterile de-ionized water in a 1:19 ratio.

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The same set of microsatellite loci used for the pellets samples were also used for the reference sample set. However, PCR protocols needed to be redeveloped and optimized

for the ABI-377 sequencer in the WDFW laboratory (Appendix for protocols). Because different sequencers (ABI 310 versus ABI-377) can provide slightly different results, a set of samples was run on both machines for all microsatellites and was used to calibrate the results from the ABI-377 to those from the ABI-310.

### Mitochondrial Control Region

We also used Restriction Fragment Length Polymorphisms (RFLPs) of the mtDNA control region, using unpublished primer sequences from Ashland Forensics Lab (Fain and LeMay, pers. com; Appendix C). This provided us one additional genetic marker for a total of 8 markers (6 microsatellites, RFLPs from one section of the mtDNA, and gender) to define the unique genotype of individual deer. RFLPs were determined by: 1) PCR amplification of a portion of the mtDNA control region, 2) digestion with restriction enzyme MseI, 3) electrophoresis on 15% acrylamide gels, and 4) scoring of bands according to observed patterns.

RFLP work was not conducted on the tongue tissue samples. Instead, we developed primer sequences and PCR protocols for sequencing the entire control region of black-tailed deer (see Appendix for protocols). The amplified sequence is roughly 1140 base

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pairs and includes the entire control region and portions of the adjoining tRNA-Pro (Proline) (5' end) and tRNA-Phe (Phenylalanine) (3' end). The 3' end of the amplified DNA is difficult to sequence due to a series of insertions and deletions (i.e. indels) and a high T (thymine) content. Therefore, we established protocols to sequence, with confidence, an 897 bp fragment from the 5' end of the control region, which covers approximately 82% of the entire control region sequence.

Data manipulation and analysis was conducted using SAS for Windows (SAS Institute Inc. 1999). Hardy-Weinberg equilibrium for the microsatellite data was tested using Genetic Data Analysis (Lewis and Zaykin 2001). Phylogenetic comparisons of mitochondria control region sequences were analyzed using maximum likelihood estimates (PAUP\* 4.0, (Swofford 1998).

## RESULTS AND DISCUSSION

### *Line Transect Analysis*

We collected a total of 864 pellet groups, ranging from 20 to 93 groups from 8 to 12 transects in each subarea (Table 2). The total length of transects surveyed was 217 km. We did not meet our goal of 40 pellet groups for 2 of the 12 subareas. Inspection of the pellet data determined there was not a dramatic difference in the detection curves among

the three different habitat types, nor among the two age-classes. Therefore we estimated the final pellet detection curve by pooling all data across the 12 subareas.

The most parsimonious model (A.I.C. value = 1783) determined by Program DISTANCE was the Hazard Rate key :

$$P(k) = 1 - e^{-\left[\left(\frac{d}{A_1}\right)^{-A_2}\right]}$$

where  $P(k)$  = probability of detecting a pellet group,  $d$  = distance (cm) from line transect,  $A_1 = 16.25$ , and  $A_2 = 2.157$ , respectively. Total chi-square Goodness of Fit test was 0.0368,  $p = 0.84783$ .

Pellet groups were readily detected on the transect line, but detection probability dropped rapidly away from the transect line (Figure 3). Detection probability was 0.5 at 20 cm away from line center and approached zero at 1 meter off center of transect. This was similar to the pellet detection curve estimated for the Olympic National Park (Jenkins *et al.* 1999). Overall probability of detection was 0.25 (s.e. 0.013). Estimated density of 0-7 day old pellets was 7,640 pellet groups per square kilometer ( $CV = 7.4\%$ ). The average pellet density estimated in the Olympic National Park (which included an older age class not included in our estimate) was 10,949 groups/km<sup>2</sup> (Jenkins *et al.* 1999).

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Applying a standard deposition rate of 12-16 pellet groups per day per animal (Kirchhoff 1990, Longhurst and Connolley 1982, Neff 1968) and assuming a 7 day deposition period, we estimated an average density of 78 deer per square kilometer (range of 60-102, using lower and upper ranges of deposition rates and 90% C.I. of pellet density). Jenkins *et al.* (1999), using deer pellet transects, estimated deer population density in one study area in the north Olympics to be 5.3 deer /km<sup>2</sup>.

One difference between our study area and Jenkins *et al.* (1999) is that our area included significant level of managed forest landscape which includes a mosaic of age class forests tending to be much younger than those found in Jenkins's study. These early age forests tend to produce more forage for deer and could explain higher densities estimated by this study. However we believe our estimate of deer density is undoubtedly high. It is likely we significantly underestimated the deposition period represented by the deer pellets groups collected. If deer densities in our study areas were similar to those in Jenkins *et al.* (1999) the pellet deposition period for samples we collected would be in the neighborhood of 100 days instead of the 7 days we assumed. Unfortunately we did not record older pellets encountered along transects, which would have allowed us to compare estimates with Jenkins *et al.* (1999) based on assumed 165 day deposition period representing the entire winter range season.

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In general, estimates of deer densities in heavily managed forests in western Washington range from 1-89 deer per square kilometer, with typical densities more in neighborhood of 5-20 deer / km<sup>2</sup> (Ratti *et al.* 1999, Jenkins *et al.* 1999, Raedeke 1986, Brown 1961). Several studies have pointed out problems in estimating age of pellets (Harestad and Bunnell 1987, Ryel 1971, Van Etten and Bennett 1965). One interesting note is that when we conducted the pellet analysis using only 0-2 day old pellets (pellet density estimate = 1,322 pellets / day / square km) the overall density estimate was consistent with the estimate using 0-7 day old pellets ( 1,091 pellets / day / square km), suggesting a similar bias in underestimating age of pellet groups in the 0-2 day category as in the 0-7 day category.

We did find significant differences in the pellet densities according to forest canopy overstory category (Figure 4). Early seral transect pellet densities (8600 groups/ km<sup>2</sup>) and late seral transect pellet densities (7800 groups / km<sup>2</sup> ) were significantly greater than middle age forest transect pellet densities (5200 groups / km<sup>2</sup>).

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*DNA Results - Pellets*

There were considerable problems extracting and amplifying sufficient quantities of DNA material from the pellets. All pellets were collected during winter and were extremely wet when collected. This may have resulted in substantial degradation in the fecal DNA material. In addition, true pellet group ages were likely older than originally thought and may have also contributed to DNA degradation. Because of these difficulties a larger proportion of the budget was spent on protocol development and testing. This limited the total number of pellet groups collected that were actually sampled for DNA. Six subareas were randomly selected for this pilot analysis. In each subarea at least 20 pellet groups in both the north-south and east-west transects were randomly selected for DNA genotyping.

A total of 316 pellet groups were analyzed for microsatellites and gender (Appendix A). Subsequently 260 of these same groups (with one or more amplified locus) were subjected to RFLP analysis. We were unable to amplify any DNA at any of the 8 markers for 18% of the samples (Figure 5). We amplified 4 or more of the 8 markers for 44% of the samples. All 8 markers amplified at 8% of the samples. All the microsatellite loci were highly variable, ranging from 18 alleles at Cal-M to 26 alleles at Cal-O. RFLP amplification and scoring had the highest success: 243 of 260 cases (93%) amplified, revealing 9 different RFLP types (Table 4 and Figure 6). The RFLP variability, coupled

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with an extremely high amplification rate, suggested to us that this approach may make a powerful complement to microsatellite DNA analyses in estimating minimum population size in future work. We determined gender at forty-five percent of the samples, indicating there were in 89 males and 53 females (1.68 males/female) in the sample.

All of the 6 microsatellite loci deviated significantly from Hardy-Weinberg equilibrium, showing an excess of homozygotes (Table 4). We tested to determine if these results were caused from allelic drop-out from degraded fecal DNA. Six predominantly homozygous samples across all loci were re-extracted for DNA in triplicate and each replicate was PCR-amplified seven times for the six loci and gender, comparing percent correspondence.

The results confirmed that allelic dropout was contributing to the large number of homozygous microsatellite loci in the sample set. Additionally, the microsatellite locus Cal-M gave us particular problems during amplification so we dropped it from our list of usable genetic markers. Given these results, we were not confident in identifying genotypes of individual pellet samples and did not conduct a population model estimate from these data. Further work is needed to accurately genotype samples before an appropriate analysis of these data can be made to estimate black-tailed deer on the Olympic Peninsula.

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*DNA Results – Vail-Pysht Tissue*

DNA extraction and PCR amplification was much more successful from tissue collected from harvested deer in the Vail and Pysht study areas (Tables 4a and 4b). We were able to amplify over 90% of the samples attempted for four of the five loci. We did not see allelic drop out or null allele problems encountered with the deer pellet samples.

Heterozygote frequencies were not different from those expected for Hardy-Weinberg equilibrium (Tables 5a and 5b; and Figure 6), although the probability of deviation from Hardy-Weinberg for both Rt-5 and Cal-O was less than 0.10.

The number of alleles for each locus was much less in the tissue samples ( $\bar{X} = 7.4$ ) than identified in the pellets ( $\bar{X} = 23.8$ ). Because of the difficulties we had in extracting, amplifying and scoring the pellet samples, we are not confident that the differences in allele frequencies between the tissue and pellet samples are real. DNA fluorescence levels from the pellet samples were much less than DNA fluorescence levels from tissue samples resulting in difficulties in identifying clean peaks in the electropherograms.

Preliminary results suggest an unexpectedly high variation in identified genotypes between the two study areas Vail and Pysht. Microsatellite differences in allele frequencies were most pronounced for locus CRSP-1 (Tables 5a and 5b, and Figure 7). Expected heterozygosity for CRSP-1 was 0.63 in the Vail study area (number of alleles =

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5) but was only 0.24 in the Pysht area (number of alleles = 2). Control region sequence data (Appendix B) from the baseline samples of deer from Vail and Pysht check stations also suggest these two localities may be functioning as genetically isolated populations. Of the 43 haplotypes (from 9?) tested individuals, no haplotypes are shared between Vail and Pysht study areas. Vail and Pysht are over 100 miles apart and are separated by the Olympic Mountains (see Figure 1). The maximum likelihood estimates of genetic distances suggest the two populations can generally be separated by their control region sequences. The phylogenetic relationship of the control region haplotypes is shown in Figure 8.

Jenkins *et al.* (1999) documented extremely small movements during winter for black-tailed deer on the north side of the Olympic National Park, near Pysht (median home range size = 51 ha). They also found six of ten adult females radio-collared migrated to higher elevations during summer at median distances of 26 km between winter and summer ranges. Their results found that all migratory deer were back on their winter range by the end of October (prior to peak breeding season in mid-late November (Wallmo 1981, Brown 1961). Future work will be necessary to identify and analyze genotypes from deer with home ranges between these two study areas to better understand the possible significance to population dynamics of black-tailed deer on the Olympic Peninsula.

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## SUMMARY AND RECOMMENDATIONS

We were able to collect a large number of presumably relatively fresh black-tailed deer pellets from randomly selected transects on the Olympic Peninsula. A total of 160 staff days were employed to collect 864 pellets from 12 randomly selected one square mile plots. Not all pellets were recorded and collected that were encountered. We restricted our collection to the freshest pellets because we wanted to maximize the potential for extracting high quality DNA and we wanted to minimize collecting pellets that were from individual deer that were no longer resident on the study plot during the period of data collection. The cost for collecting these pellets was approximate \$20 per sample.

Because of the difficulties in determining the age of pellets and subsequent period of pellet deposition we do not recommend line transect analysis to estimate absolute abundance of deer, without additional work to verify actual period of pellet deposition. However, if a general index of population trend is desired, pellet transects can be used to monitor local changes in the population. We were successful in distinguishing significant differences in relative abundance of deer according to habitat type, and geographically different areas.

We did not achieve our original objective to estimate black-tailed deer populations using a DNA-based “mark-recapture” analysis. The difficulties in extracting quality DNA from

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the deer pellets limited our ability to assign individual genotypes to pellet samples with the confidence necessary to apply appropriate models. However, our collective experiences gives us hope that estimating black-tailed deer abundance using this technique may still be feasible. Subsequent to our work on this project we have established a new protocol for extracting DNA from these pellets. The new methods include the use of a new product from Qiagen (QIAamp DNA Stool Mini Kit). This kit is designed to extract either bacterial or human DNA from human fecal material. We have modified and optimized the Qiagen protocols for use with deer pellets and the results have been extremely promising; we have extracted high quality deer DNA from roughly 50% of the pellets sampled thus far. Furthermore we have added an additional six microsatellites loci and have fine-tuned the PCR protocols such that we now have upwards of 10 microsatellites markers, the control region sequence, and gender, which we believe will be successful in genotyping deer pellets.

Results from this project indicate the importance of proper specimen collection and handling protocols. Specifically, user-friendly criteria need to be developed that allow sample collectors to reliably estimate sample age. Detailed attention must be given to sample preservation methods. Uninterrupted freezing immediately (within 12 hours) after collection is the best way to store samples. Repeated freezing and thawing of samples should be avoided. Samples should also be wrapped in a coffee-filter and placed in a zip-

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loc bag, containing a 4:1 ratio of silica to sample, immediately upon collection in the field (Wasser *et al.* 1997).

Sampling efforts should be scheduled during summer if pellets collected during drier months provide higher quality DNA material. Deer pellets subjected to winter or spring rains may yield less DNA due to an accelerated rate of decomposition. We are currently investigating what types of pellets (e.g., hard dry pellets versus soft wet pellets) yield the highest quality DNA. In the future, it will be important to establish protocols for permitting reliable estimates of pellet age. First, fresher pellets may yield higher quality DNA. Second, a more accurate estimate of the age of each pellet group would also provide a better estimate of the deer density in a given area.

Although we did not reach our original objective for this project, as a direct result of this project we now have protocols and procedures that we feel will provide not only high quality DNA from pellet samples, but may enable us to ultimately use DNA material from pellets to estimate deer densities on the Olympic Peninsula. Protocols still need to be refined, but we have made significant headway through a technically demanding process.

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**Table 1. One square mile plots (subareas) sampled during study, Olympic Peninsula, 1998.**

| Plot ID | Name                | Seral Stage             |
|---------|---------------------|-------------------------|
| 181031  | New London          | Mid (Terry et al. 1996) |
| 190727  | Prices Peak         | Early                   |
| 190813  | Wynoochie Valley NE | Early (Cam et al. 2000) |
| 191126  | Copalis Crossing    | Mid (Terry et al. 1996) |
| 200708  | Wynoochie Valley NE | Early                   |
| 200720  | Wynoochie Valley NE | Early                   |
| 210731  | Grisdale            | Mid (Terry et al. 1996) |
| 220829  | Larsen Creek        | Late                    |
| 241125  | Salmon River E      | Early                   |
| 241213  | Salmon River W      | Early (Cam et al. 2000) |
| 270230  | Mt. Walker          | Late                    |
| 281202  | Indian Pass         | Mid (Terry et al. 1996) |

\*\* Plot ID is combination of Township, Range and Section.

\*\* Seral Stage determined by Washington State Gap Analysis Mapping Project.

\*\* Stages in parentheses under seral stage indicate a large portion (occasionally almost half) of the plot was in that stage.

**Table 2. Black-tailed Deer Pellet Transect Information, Olympic Peninsula 1998.**

| Plot ID  | Dates Visited      | Transect<br>#’s | North South<br>Transects | East West Transects | Pellet<br>Groups<br>Collected |
|----------|--------------------|-----------------|--------------------------|---------------------|-------------------------------|
| 181031** | 3/26,4/1           | 10              | 1,2,5,6,8                | 20,23,24,30,32      | 91                            |
| 190727** | 3/18-3/19          | 12              | 2,3,6,10,11,15           | 17,19,20,22,23,32   | 88                            |
| 190813** | 3/16-<br>3/17,3/25 | 12              | 4,5,8,9,13,16            | 19,24,26,29,31,32   | 93                            |
| 191126** | 3/23-3/25          | 12              | 6,9,12,13,14, 16         | 17,21,23,24,26,31   | 83                            |
| 200708   | 5/5-5/6            | 12              | 5,6,7 11,13,16           | 17,18,25,26,28,31   | 79                            |
| 200720   | 5/7                | 8               | 2,6,8,15                 | 17,18,22,28         | 20                            |
| 210731   | 3/11-3/12,<br>3/17 | 10              | 5,9,14,15,16             | 22,24,25,27,30      | 93                            |
| 220829   | 4/3-4/4            | 8               | 5,6,7,16                 | 18,20,21,22         | 92                            |
| 241125   | 4/16,<br>4/20-4/21 | 12              | 3,4,5,12,14,15           | 17,18,23,26,28,30   | 25                            |
| 241213   | 4/14-4/15          | 12              | 4,7,9,10,13,16           | 21,22,24,30,31,32   | 47                            |
| 270230** | 4/27-4/29          | 12              | 2,3,7,11,13,15           | 19,24,26,27,29,31   | 84                            |
| 281202** | 4/8-4/9            | 12              | 7,11,12,13,14,16         | 21,24,27,28,30,32   | 69                            |

\*\* Indicates Plots sampled for DNA analysis

**Table 3. Black-tailed deer pellet densities for each square mile plot calculated using Program Distance, Olympic Peninsula Washington, 1998.**

| PlotID | Pellet Density Estimate | %CV | df | 95% Confidence Interval |        |
|--------|-------------------------|-----|----|-------------------------|--------|
| 181031 | 9,966                   | 21  | 10 | 6,269                   | 15,843 |
| 190727 | 8,907                   | 21  | 18 | 7,011                   | 11,316 |
| 190813 | 8,851                   | 11  | 18 | 7,003                   | 11,187 |
| 191126 | 7,570                   | 21  | 13 | 4,814                   | 11,903 |
| 200708 | 7,419                   | 19  | 13 | 4,939                   | 11,144 |
| 200720 | 3,338                   | 26  | 8  | 1,862                   | 5,984  |
| 210731 | 10,367                  | 14  | 12 | 7,619                   | 14,106 |
| 220829 | 12,711                  | 15  | 9  | 9,092                   | 17,770 |
| 241125 | 2,730                   | 26  | 12 | 1,575                   | 4,730  |
| 241213 | 4,932                   | 26  | 12 | 2,851                   | 8,532  |
| 270230 | 7,809                   | 17  | 14 | 5,435                   | 11,222 |
| 281202 | 7,802                   | 23  | 12 | 4,331                   | 11,580 |

**Table 4. Amplification success, expected heterozygosity ( $H_e$ ), and observed heterozygosity ( $H_o$ ) of 6 microsatellite loci, gender and mtDNA RFLP type from black-tailed deer pellets (n=316) collected at 12 square mile plots on Olympic Peninsula, Washington, 1998.**

| Locus   | n samples | Percent Amplified | Number of Alleles | $H_e$ | $H_o$ | Prob $H_o \leq H_e$ |
|---------|-----------|-------------------|-------------------|-------|-------|---------------------|
| Gender  | 142       | 45%               | na                | na    | na    | na                  |
| RFLP    | 243       | 93% **            | na                | na    | na    | na                  |
| Texan 4 | 85        | 27%               | 25                | 0.94  | 0.26  | < 0.000             |
| CRSP-01 | 141       | 45%               | 26                | 0.93  | 0.33  | < 0.000             |
| RT-5    | 124       | 39%               | 25                | 0.94  | 0.48  | < 0.000             |
| Cal-M   | 164       | 52%               | 19                | 0.92  | 0.58  | < 0.000             |
| Cal-O   | 196       | 62%               | 27                | 0.94  | 0.63  | < 0.000             |
| Cal-D   | 177       | 56%               | 21                | 0.93  | 0.54  | < 0.000             |

\*\* Total samples subjected to RFLP analysis = 260

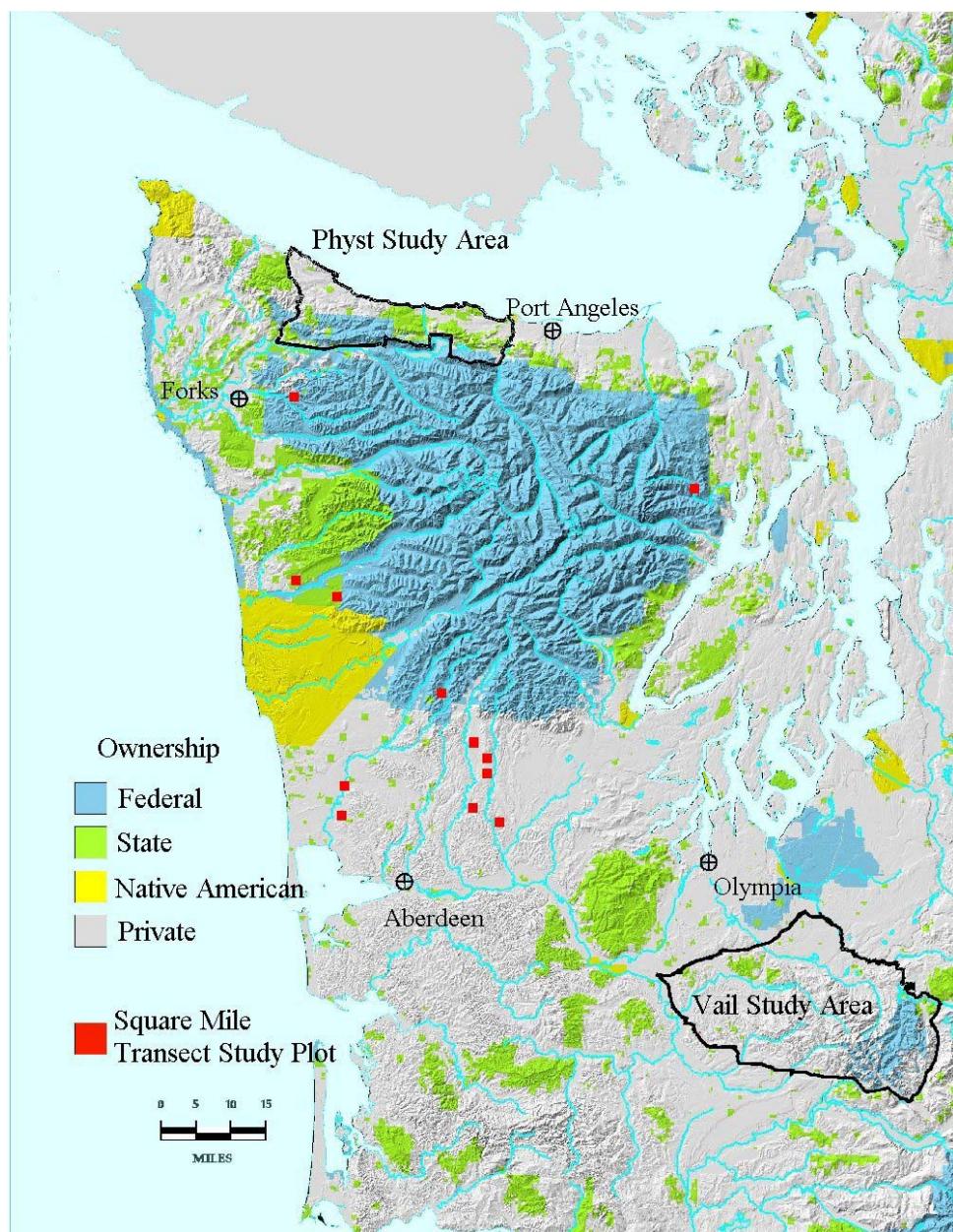
**Table 5a. Amplification success, expected heterozygosity ( $H_e$ ), and observed heterozygosity ( $H_o$ ) of 5 microsatellite loci from black-tailed deer tissue (n=48) collected at Vail Study Area, Washington, 1999.**

| Locus   | n samples | Percent Amplified | Number of Alleles | $H_e$ | $H_o$ | Prob $H_o \triangleleft H_e$ |
|---------|-----------|-------------------|-------------------|-------|-------|------------------------------|
| Texan 4 | 45        | 94%               | 6                 | 0.72  | 0.67  | < 0.361                      |
| CRSP-01 | 46        | 96%               | 5                 | 0.63  | 0.59  | < 0.216                      |
| RT-5    | 47        | 98%               | 9                 | 0.82  | 0.81  | < 0.802                      |
| Cal-O   | 41        | 85%               | 8                 | 0.79  | 0.83  | < 0.794                      |
| Cal-D   | 46        | 96%               | 8                 | 0.85  | 0.74  | < 0.120                      |

**Table 5b. Amplification success, expected heterozygosity ( $H_e$ ), and observed heterozygosity ( $H_o$ ) of 5 microsatellite loci, from black-tailed deer tissue (n=44) collected at Pysht Study Area, Washington, 1999.**

| Locus   | n samples | Percent Amplified | Number of Alleles | $H_e$ | $H_o$ | Prob $H_o \triangleleft H_e$ |
|---------|-----------|-------------------|-------------------|-------|-------|------------------------------|
| Texan 4 | 43        | 98%               | 4                 | 0.63  | 0.65  | < 0.660                      |
| CRSP-01 | 44        | 100%              | 2                 | 0.24  | 0.25  | < 1.000                      |
| RT-5    | 43        | 98%               | 6                 | 0.72  | 0.60  | < 0.089                      |
| Cal-O   | 41        | 93%               | 7                 | 0.75  | 0.66  | < 0.062                      |
| Cal-D   | 43        | 98%               | 7                 | 0.77  | 0.74  | < 0.789                      |

**Figure 1. Olympic Peninsula Deer Study Area, showing randomly selected 1 sq. mile subareas.**



**Figure 2. Enlargement of 1 subarea (Transect ID 190813) showing north-south and east-west transect lines, and deer pellet locations (circles) encountered along transects.**

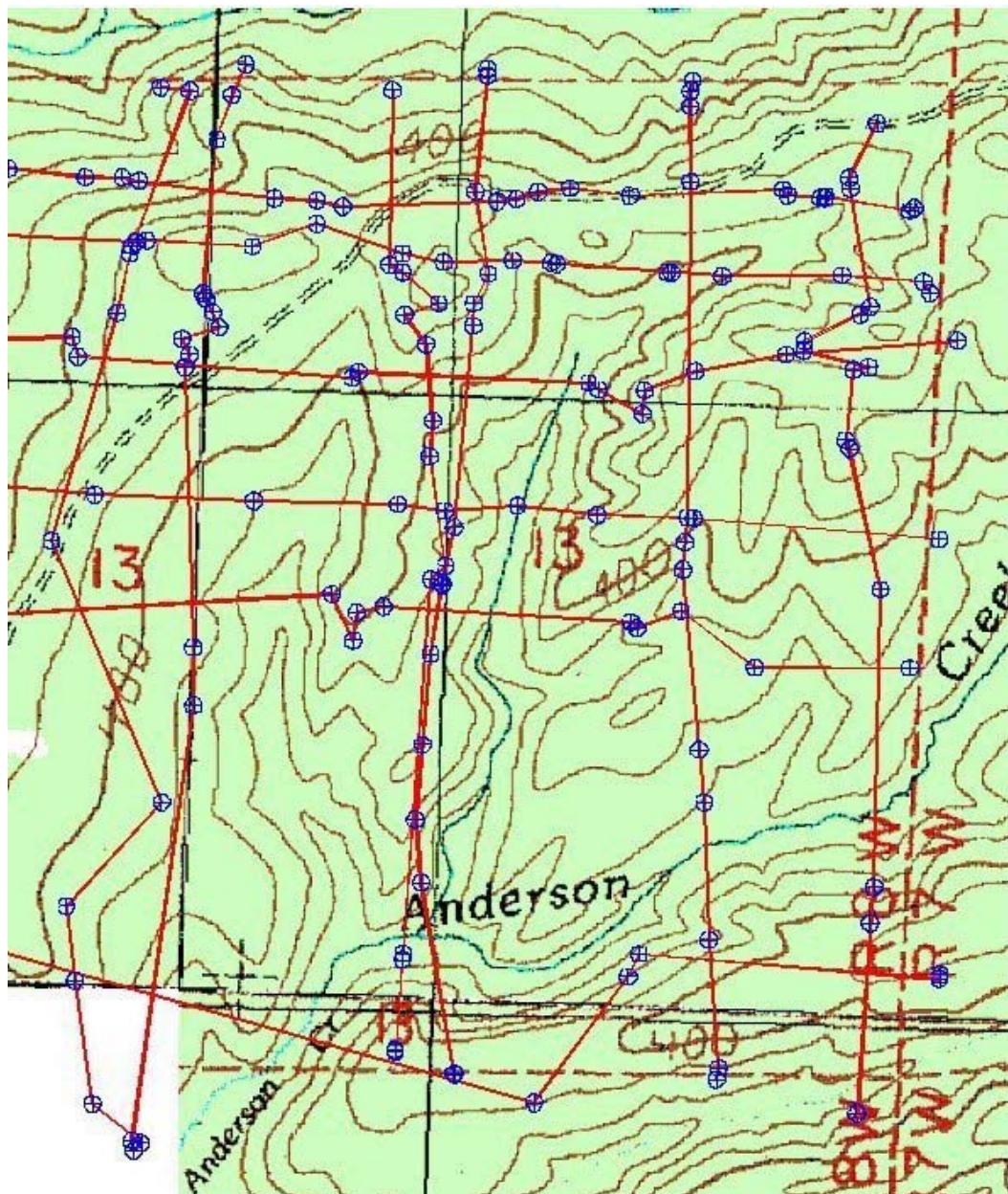
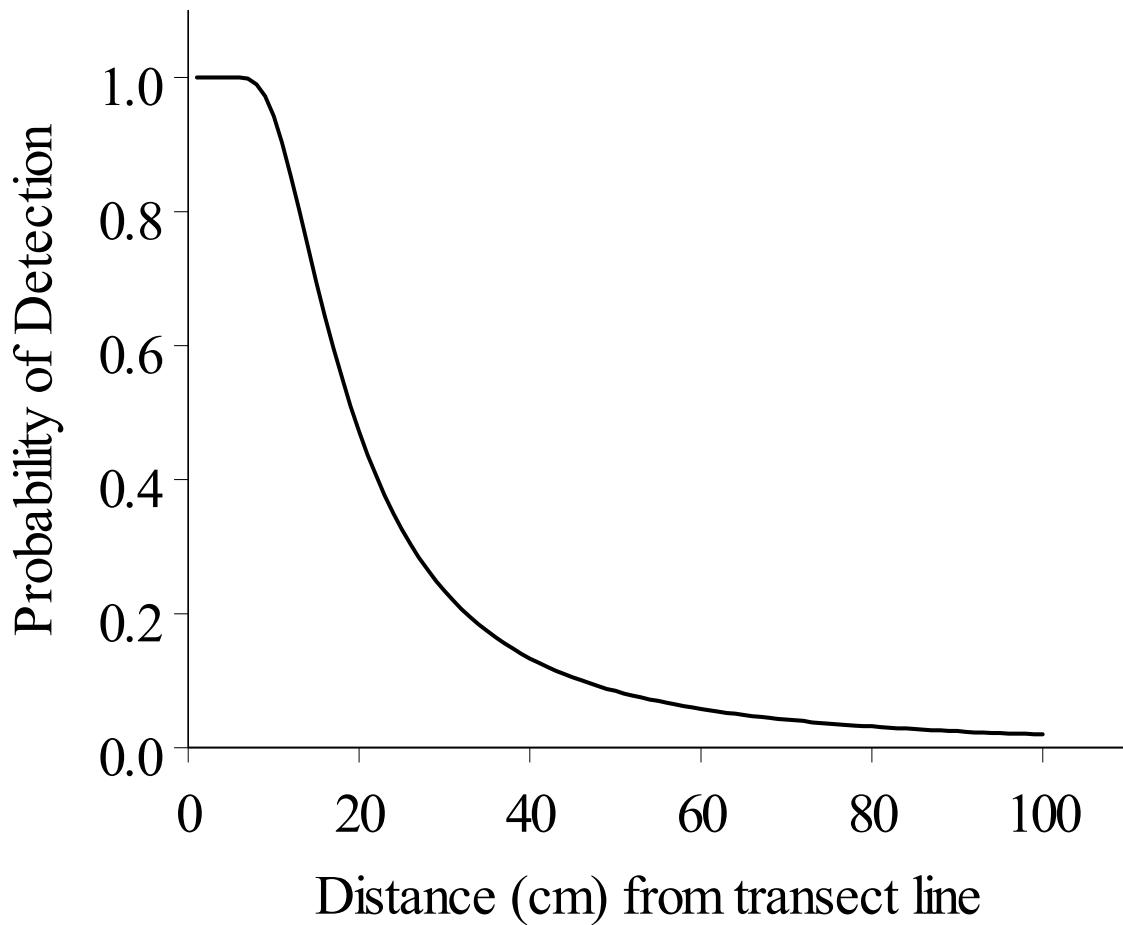
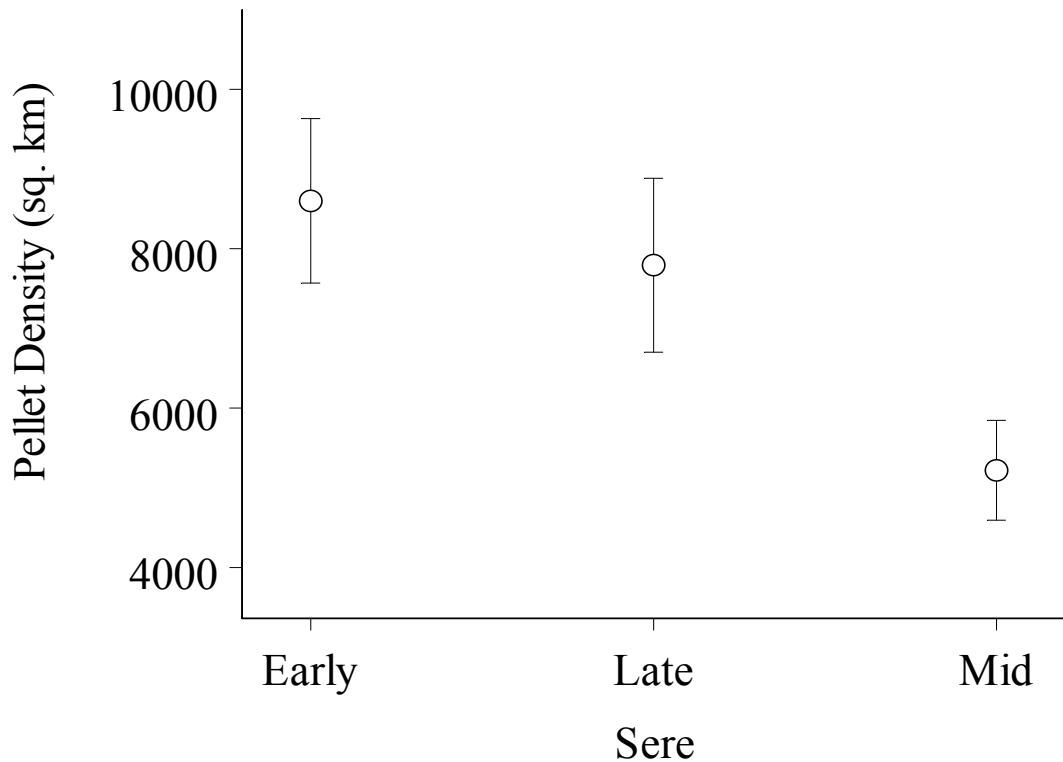


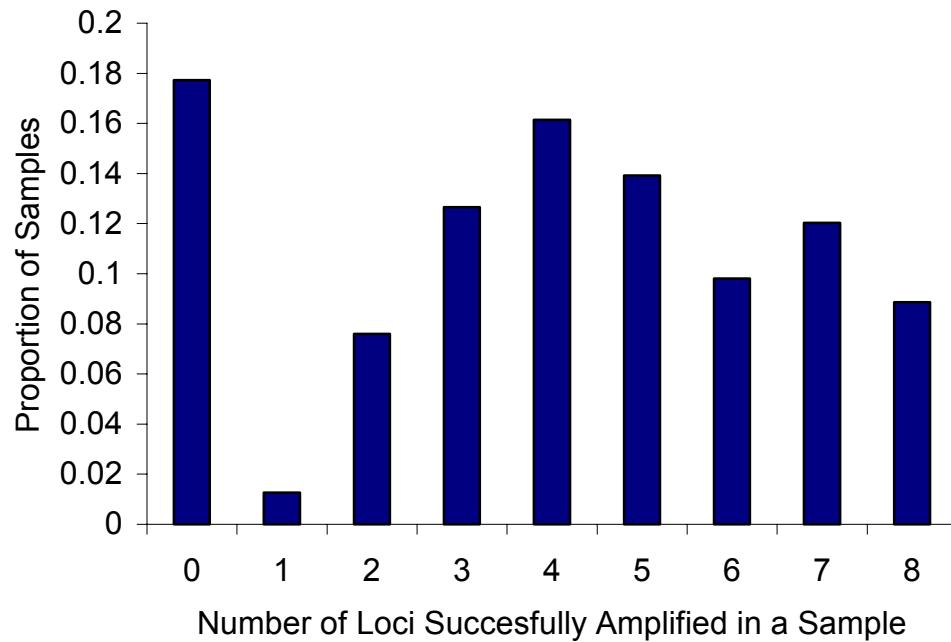
Figure 3. Black-tailed deer pellet detection curve along line transects in Olympic Peninsula, Washington.



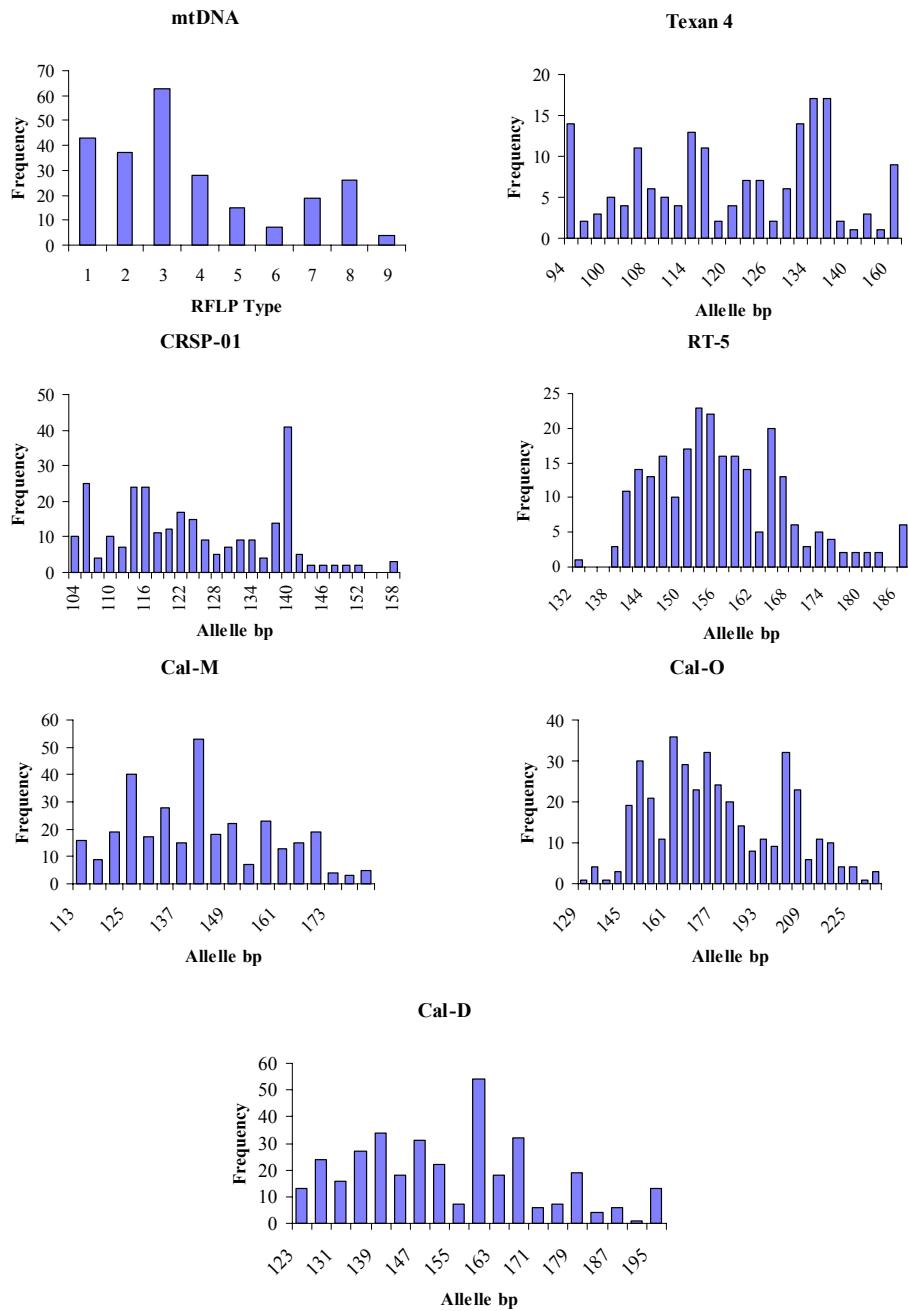
**Figure 4. Black-tailed deer pellet densities (and s.d. error bars) in three different seral age class of forest overstory, Olympic Peninsula Washington, 1998.**



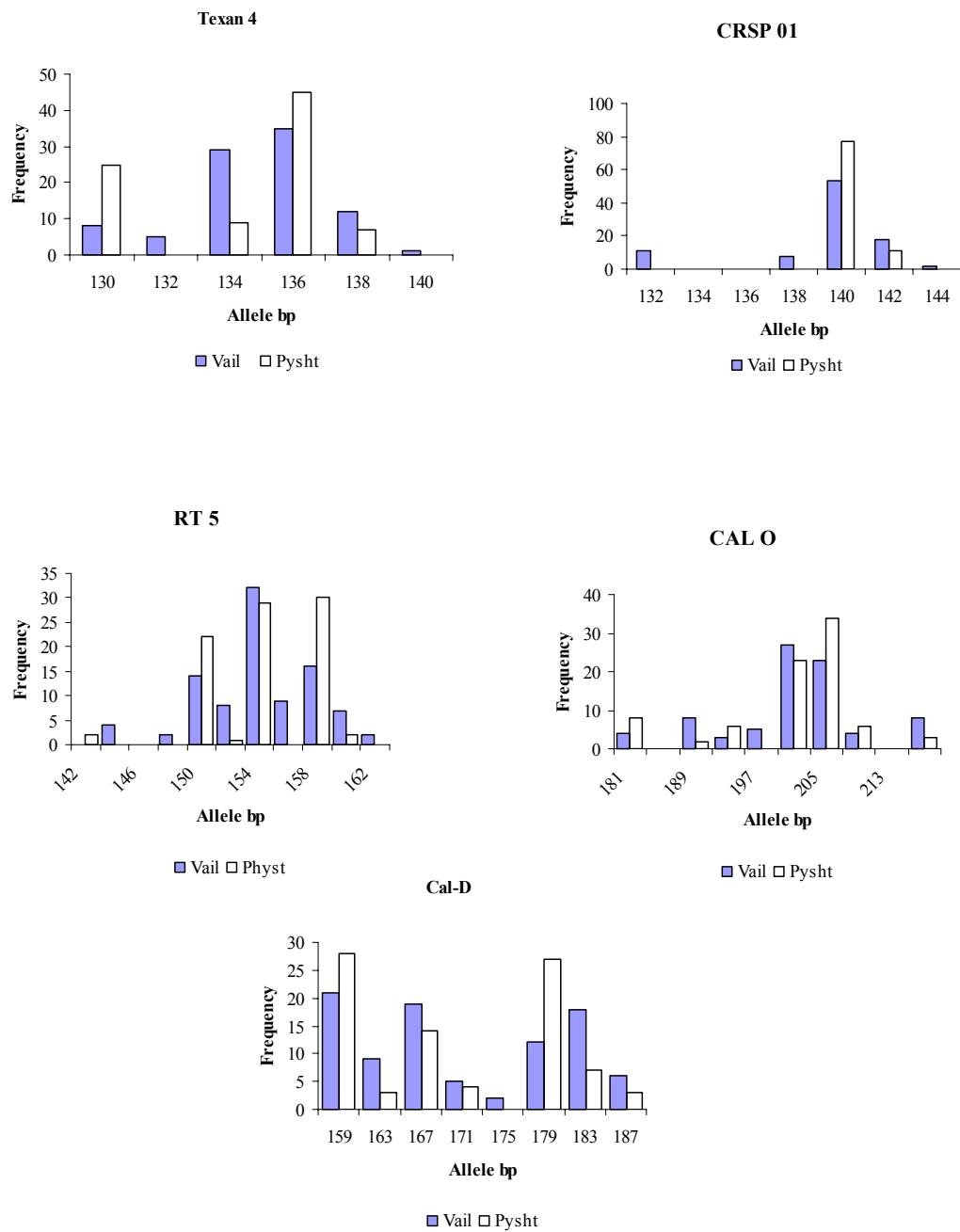
**Figure 5. The percentage of total samples with successful amplification of DNA at 8 different genetic markers (6 microsatellites, sex, and mtDNA control region).**



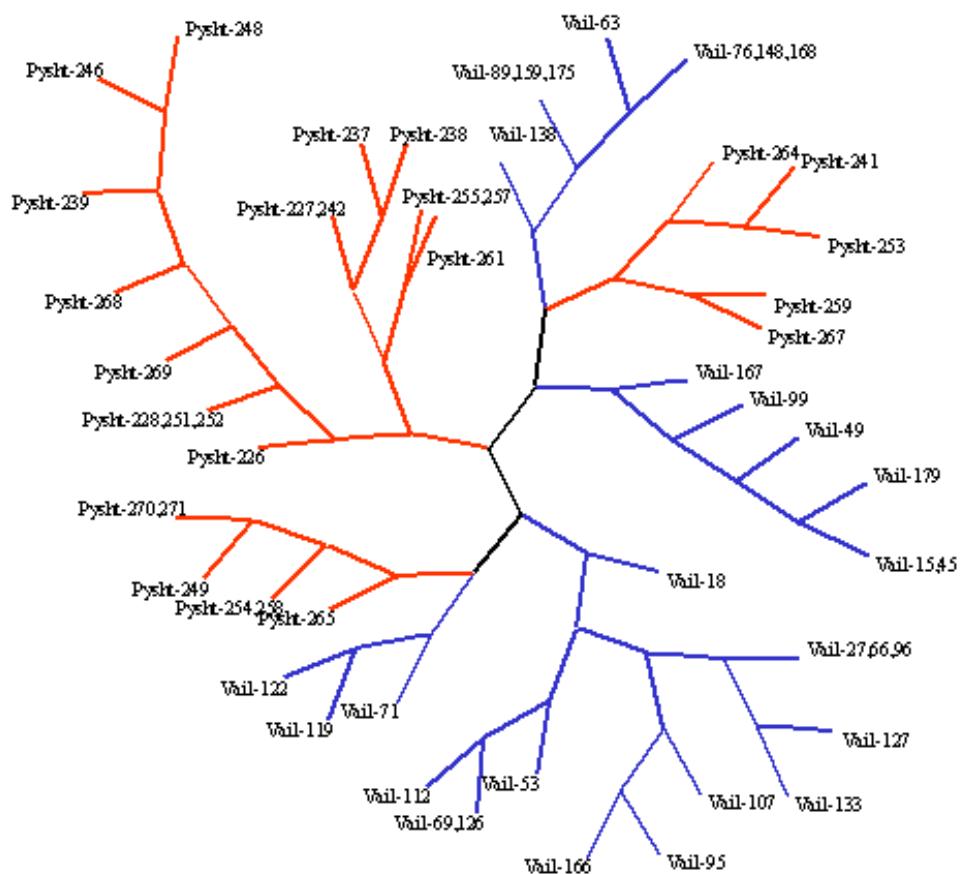
**Figure 6. Allele frequency distribution at 6 microsatellite loci and mtDNA RFLP type from black-tailed deer pellets collected at 10 sites on the Olympic Peninsula, Washington.**



**Figure 7. Allele frequency distribution for 5 different microsatellite loci from black-tailed deer tissue at Vail (n=48) and Pysht (n=44) study areas, western Washington.**



**Figure 8. Unrooted phylogeny diagram of 43 haplotypes for mitochondria control region sequence data from two black-tailed deer populations, Vail (n=30) and Pysht (n=28) in western Washington.**





Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4  | CRSP-01 | RT-5    | CAL-M   | CAL-O   | CAL-D   | Gender | Alleles |
|--------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|--------|---------|
| 1      | 181031  | 1        | 1        | type6 | 160/160 | ???     | 146/146 | 145/145 | 149/149 | ???     | ???    | ???     |
| 2      | 181031  | 2        | 1        | type2 | 94/94   | 130/140 | 154/154 | ???     | 169/209 | 127/127 | M      | 115     |
| 3      | 181031  | 5        | 1        | type5 | ???     | 118/124 | 158/164 | 157/157 | 173/189 | 139/151 | M      | 115     |
| 4      | 181031  | 5        | 3        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 5      | 181031  | 5        | 4        | type4 | ???     | ???     | ???     | 129/129 | ???     | ???     | ???    | ???     |
| 6      | 181031  | 5        | 6        | type2 | ???     | ???     | ???     | ???     | 141/149 | 123/123 | ???    | ???     |
| 7      | 181031  | 5        | 8        | type2 | ???     | 104/116 | 138/140 | 153/173 | 205/205 | 139/139 | M      | 115/126 |
| 8      | 181031  | 5        | 9        | na    | ???     | 140/140 | ???     | ???     | ???     | ???     | ???    | ???     |
| 9      | 181031  | 5        | 10       | type1 | ???     | 106/106 | ???     | 121/133 | 153/153 | 135/146 | M      | 115/126 |
| 10     | 181031  | 5        | 12       | type4 | ???     | ???     | ???     | ???     | 145/145 | ???     | ???    | ???     |
| 11     | 181031  | 5        | 14       | type1 | ???     | ???     | 154/154 | 121/149 | 149/193 | 167/167 | M      | 115/126 |
| 12     | 181031  | 5        | 15       | type9 | 100/100 | 128/128 | 152/154 | 141/141 | 169/217 | 123/147 | M      | 115/126 |
| 13     | 181031  | 5        | 17       | type1 | ???     | ???     | 154/154 | 137/149 | 177/185 | 179/191 | F      | 126     |
| 14     | 181031  | 6        | 1        | na    | 94/94   | 124/124 | ???     | ???     | ???     | ???     | M      | 115     |
| 15     | 181031  | 6        | 2        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 16     | 181031  | 6        | 4        | type8 | 142/142 | 122/122 | 144/146 | 121/157 | 157/157 | 131/135 | M      | 115/126 |
| 17     | 181031  | 6        | 5        | type8 | 124/124 | 118/122 | ???     | 129/165 | 189/201 | 143/155 | M      | 115     |
| 18     | 181031  | 6        | 6        | type2 | ???     | ???     | ???     | 141/157 | 133/133 | 151/151 | ???    | ???     |
| 19     | 181031  | 6        | 8        | type4 | 98/98   | 120/120 | 152/152 | 145/145 | 149/177 | 179/179 | F      | 126     |
| 20     | 181031  | 6        | 9        | type1 | ???     | ???     | ???     | 141/173 | 129/177 | 129/179 | F      | 126     |
| 21     | 181031  | 6        | 10       | type2 | ???     | ???     | ???     | ???     | 157/157 | ???     | ???    | ???     |
| 22     | 181031  | 6        | 11       | type6 | ???     | ???     | ???     | 149/161 | 153/165 | 155/163 | ???    | ???     |
| 23     | 181031  | 8        | 1        | type1 | ???     | 116/126 | 156/164 | 177/177 | 177/213 | 175/175 | M      | 115     |
| 24     | 181031  | 8        | 2        | type2 | ???     | 136/140 | 140/140 | 153/165 | 217/225 | 163/171 | F      | 126     |
| 25     | 181031  | 8        | 3        | type4 | ???     | ???     | ???     | 129/129 | 205/205 | ???     | ???    | ???     |
| 26     | 181031  | 8        | 5        | type3 | 116/116 | ???     | 140/140 | 141/169 | 173/201 | 139/143 | ???    | ???     |
| 27     | 181031  | 8        | 6        | type4 | ???     | 148/148 | 160/182 | 149/157 | 201/217 | 159/167 | F      | 126     |

Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4  | CRSP-01 | RT-5    | CAL-M   | CAL-O   | CAL-D      | Gender | Alleles |
|--------|---------|----------|----------|-------|---------|---------|---------|---------|---------|------------|--------|---------|
| 28     | 181031  | 8        | 8        | type3 | 132/142 | 110/122 | 150/150 | 141/169 | 185/205 | 159/159    | F      | 126     |
| 29     | 181031  | 8        | 9        | type5 | 132/132 | 114/114 | 150/150 | 125/173 | 173/181 | 175/175    | M      | 115     |
| 30     | 181031  | 8        | 11       | type8 | ???     | 112/112 | 140/174 | ???     | 181/193 | ???        | M      | 115     |
| 31     | 181031  | 20       | 3        |       | ???     | ???     | ???     | ???     | ???     | ???        |        | ???     |
| 32     | 181031  | 20       | 4        | type2 | ???     | ???     | ???     | ???     | 161/161 | 159/159    |        | ???     |
| 33     | 181031  | 20       | 5        |       | ???     | ???     | ???     | ???     | ???     | ???        |        | ???     |
| 34     | 181031  | 20       | 7        | type4 | 122/122 | 122/122 | 166/166 | ???     | ???     | 159/159    | M      | 115/126 |
| 35     | 181031  | 23       | 1        | type5 | 120/120 | ???     | 142/142 | 149/157 | 149/149 | 167/179    |        | ???     |
| 36     | 181031  | 23       | 2        | type8 | ???     | 120/120 | ???     | 157/161 | 197/209 | 139/139    | M      | 115     |
| 37     | 181031  | 23       | 4        | type1 | 106/106 | 116/116 | 144/144 | 145/149 | 149/217 | 127/127    |        | ???     |
| 38     | 181031  | 23       | 5        | type6 | 132/132 | 134/134 | 140/154 | 137/153 | 197/205 | 127/179    | M      | 115/126 |
| 39     | 181031  | 23       | 6        | type3 | 136/136 | ???     | ???     | 133/173 | 173/209 | 147/167    | M      | 115     |
| 40     | 181031  | 23       | 7        | type1 | ???     | 142/150 | 144/144 | 153/157 | 161/161 | ???        |        | ???     |
| 41     | 181031  | 23       | 8        | type1 | ???     | 138/138 | 144/144 | 137/165 | 201/201 | 147/155    | F      | 126     |
| 42     | 181031  | 23       | 9        | type2 | 136/136 | 114/140 | 162/166 | 137/165 | 177/213 | 167/167    | F      | 126     |
| 43     | 181031  | 23       | 10       | na    | ???     | 108/120 | 160/160 | 133/137 | 177/177 | ???        | M      | 115     |
| 44     | 181031  | 24       | 2        | type4 | ???     | ???     | ???     | 157/157 | 153/201 | ???        | M      | 115     |
| 45     | 181031  | 24       | 4        | type4 | ???     | ???     | ???     | ???     | 153/201 | 123/123    |        | ???     |
| 46     | 181031  | 24       | 5        | type9 | ???     | ???     | ???     | ???     | 153/153 | ???        |        | ???     |
| 47     | 181031  | 24       | 6        | type2 | 102/102 | ???     | ???     | 149/157 | 201/213 | ???        | F      | 126     |
| 48     | 181031  | 24       | 8        | type4 | 132/132 | 122/122 | 164/164 | 141/141 | 185/205 | ???        | F      | 126     |
| 49     | 181031  | 24       | 9        | type3 | 110/110 | 112/112 | 156/156 | ???     | 173/173 | 159/159    |        | ???     |
| 50     | 181031  | 24       | 10       | type1 | ???     | 118/118 | 164/168 | ???     | 161/181 | 139/147    | M      | 115/126 |
| 51     | 181031  | 24       | 11       | type2 | 116/116 | ???     | ???     | 141/145 | 169/177 | 135/143    | M      | 115     |
| 52     | 181031  | 24       | 12       | type3 | 98/140  | 158/158 | 158/158 | 125/133 | 169/185 | ???        | M      | 115/126 |
| 53     | 181031  | 24       | 13       | type1 | ???     | 118/130 | 158/160 | 157/157 | 153/153 | 135/163??? | F      | 126     |
| 54     | 181031  | 30       | 1        |       | ???     | ???     | ???     | ???     | ???     | ???        |        | ???     |
| 55     | 181031  | 30       | 2        |       | ???     | ???     | ???     | ???     | ???     | ???        |        | ???     |
| 56     | 181031  | 30       | 8        |       | ???     | ???     | ???     | ???     | ???     | ???        |        | ???     |

DNA methods to estimate wolf prey densities on the Olympic Peninsula, Washington

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Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4  | CRSP-01 | RT-5    | CAL-M   | CAL-O   | CAL-D   | Gender | Alleles |
|--------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|--------|---------|
| 57     | 181031  | 30       | 9        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 58     | 181031  | 30       | 10       | type4 | 132/132 | 126/126 | 164/164 | 141/141 | 185/205 | ???     | F      | 126     |
| 59     | 181031  | 30       | 11       |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 60     | 181031  | 30       | 12       |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 61     | 190727  | 2        | 1        | type1 | ???     | 122/122 | 152/170 | 141/157 | 161/181 | 131/131 | ???    |         |
| 62     | 190727  | 2        | 3        | type5 | 124/124 | 116/116 | 142/142 | 141/141 | ???     | 127/135 | F      | 126     |
| 63     | 190727  | 2        | 5        | type5 | 122/124 | 120/120 | 138/142 | 145/145 | 153/157 | 131/139 | F      | 126     |
| 64     | 190727  | 3        | 3        | type8 | 106/114 | ???     | 156/156 | 121/157 | 153/201 | 147/155 | M      | 115/126 |
| 65     | 190727  | 3        | 6        | type2 | ???     | 138/138 | ???     | 133/141 | 213/217 | 159/159 | ???    |         |
| 66     | 190727  | 3        | 7        | na    | ???     | ???     | ???     | 169/181 | 181/209 | 159/163 | ???    |         |
| 67     | 190727  | 6        | 2        | type4 | ???     | ???     | 146/146 | 117/125 | 201/213 | 139/139 | ???    |         |
| 68     | 190727  | 6        | 3        | type4 | ???     | 106/106 | 164/166 | ???     | ???     | 131/131 | F      | 126     |
| 69     | 190727  | 10       | 1        | na    | ???     | 124/134 | 142/154 | ???     | 193/193 | 135/135 | M      | 115/126 |
| 70     | 190727  | 10       | 4        | type4 | ???     | 116/116 | ???     | ???     | 149/173 | 143/143 | F      | 126     |
| 71     | 190727  | 10       | 5        | type4 | ???     | 116/116 | 164/186 | ???     | 165/165 | 163/163 | ???    |         |
| 72     | 190727  | 10       | 6        | type6 | ???     | 116/116 | 146/150 | 161/161 | 161/161 | 139/159 | F      | 126     |
| 73     | 190727  | 11       | 1        | type3 | ???     | 132/140 | 186/186 | 141/141 | 149/169 | 159/159 | M      | 115/126 |
| 74     | 190727  | 11       | 4        | type7 | ???     | 114/114 | 162/176 | 169/169 | 169/209 | 167/167 | M      | 115/126 |
| 75     | 190727  | 11       | 6        | na    | 108/108 | 106/122 | 138/152 | 141/157 | 177/177 | ???     | F      | 126     |
| 76     | 190727  | 11       | 7        | type9 | 134/134 | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 77     | 190727  | 11       | 10       | type1 | 106/106 | 120/142 | 150/172 | 121/121 | 173/225 | 195/195 | M      | 115     |
| 78     | 190727  | 15       | 1        | type7 | ???     | 116/116 | ???     | ???     | ???     | ???     | ???    |         |
| 79     | 190727  | 15       | 3        | type3 | ???     | ???     | ???     | ???     | 165/181 | 139/139 | M      | 115     |
| 80     | 190727  | 15       | 4        | na    | 100/100 | 104/104 | 164/174 | ???     | ???     | 167/167 | M      | 115     |
| 81     | 190727  | 17       | 4        | type1 | 124/124 | ???     | ???     | 117/133 | ???     | ???     | ???    |         |
| 82     | 190727  | 17       | 5        | type1 | ???     | ???     | ???     | 141/141 | 177/201 | 139/147 | ???    |         |
| 83     | 190727  | 17       | 6        | type2 | 112/112 | 116/116 | 140/142 | ???     | 201/205 | ???     | ???    |         |
| 84     | 190727  | 17       | 7        | type8 | 136/136 | 124/124 | ???     | 117/129 | 149/173 | 143/167 | M      | 115/126 |
| 85     | 190727  | 17       | 8        | type2 | ???     | 128/128 | 178/178 | 117/149 | 165/165 | ???     | F      | 126     |

Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4  | CRSP-01 | RT-5    | CAL-M   | CAL-O   | CAL-D   | Gender | Alleles |
|--------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|--------|---------|
| 86     | 190727  | 19       | 1        | type2 | ???     | 116/140 | 176/182 | ???     | ???     | 167/195 | ???    |         |
| 87     | 190727  | 19       | 2        | type8 | 134/134 | 116/116 | 160/160 | 121/149 | 201/217 | ???     | ???    |         |
| 88     | 190727  | 19       | 3        | type3 | ???     | ???     | 152/154 | 141/141 | 205/213 | 179/179 | M      | 115/126 |
| 89     | 190727  | 19       | 4        | type4 | ???     | 114/114 | 152/152 | 141/141 | 173/173 | 167/167 | M      | 115     |
| 90     | 190727  | 20       | 1        | type3 | ???     | 114/114 | 156/156 | ???     | ???     | ???     | M      | 115/126 |
| 91     | 190727  | 20       | 3        | type3 | ???     | ???     | ???     | 141/141 | 169/173 | 143/147 | M      | 115     |
| 92     | 190727  | 20       | 5        | type8 | 106/106 | 132/132 | ???     | 157/157 | 173/201 | ???     | ???    |         |
| 93     | 190727  | 20       | 6        | type1 | 112/128 | 122/132 | 146/164 | 129/149 | 173/181 | 159/159 | F      | 126     |
| 94     | 190727  | 20       | 7        | type8 | ???     | 142/142 | 152/158 | 157/169 | 201/201 | 143/147 | M      | 115/126 |
| 95     | 190727  | 20       | 8        | na    | 108/108 | ???     | 142/146 | ???     | 173/209 | 175/175 | M      | 115     |
| 96     | 190727  | 22       | 4        | type8 | ???     | 114/114 | ???     | ???     | ???     | ???     | M      | 115     |
| 97     | 190727  | 22       | 5        | type8 | 106/106 | 118/118 | ???     | 117/121 | 201/205 | ???     | ???    |         |
| 98     | 190727  | 22       | 6        | type8 | ???     | 134/134 | 152/160 | 129/129 | 165/169 | 123/127 | ???    |         |
| 99     | 190727  | 22       | 8        | type3 | ???     | 120/150 | 152/152 | 141/165 | 165/165 | 143/163 | M      | 115/126 |
| 100    | 190727  | 22       | 9        | type3 | ???     | 112/132 | 164/164 | 121/141 | 161/229 | 143/143 | M      | 115/126 |
| 101    | 190813  | 4        | 3        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 102    | 190813  | 4        | 5        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 103    | 190813  | 5        | 1        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 104    | 190813  | 5        | 3        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 105    | 190813  | 5        | 4        | type8 | 132/136 | 138/140 | 154/154 | 125/145 | 189/193 | 159/167 | F      | 126     |
| 106    | 190813  | 5        | 5        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 107    | 190813  | 5        | 6        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 108    | 190813  | 5        | 7        | type8 | ???     | 138/138 | 152/156 | 113/113 | ???     | ???     | F      | 126     |
| 109    | 190813  | 8        | 1        | type3 | ???     | 140/140 | 150/150 | ???     | 201/201 | ???     | ???    |         |
| 110    | 190813  | 8        | 3        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 111    | 190813  | 8        | 5        | type8 | ???     | 138/142 | 156/158 | 113/121 | ???     | ???     | M      | 115/126 |
| 112    | 190813  | 8        | 8        | type8 | ???     | 110/110 | 142/142 | ???     | ???     | ???     | F      | 126     |
| 113    | 190813  | 9        | 1        | type4 | ???     | 130/130 | ???     | ???     | ???     | ???     | ???    |         |
| 114    | 190813  | 9        | 4        | type8 | ???     | ???     | 168/168 | ???     | ???     | 123/135 | M      | 115     |

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Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4  | CRSP-01 | RT-5    | CAL-M   | CAL-O   | CAL-D   | Gender | Alleles |
|--------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|--------|---------|
| 115    | 190813  | 9        | 5        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     | ??      |
| 116    | 190813  | 9        | 6        | type3 | ??      | 106/106 | 146/156 | ??      | ??      | ??      | ??     | ??      |
| 117    | 190813  | 9        | 7        | type4 | 134/134 | ??      | 144/168 | ??      | ??      | ??      | F      | 126     |
| 118    | 190813  | 13       | 1        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     | ??      |
| 119    | 190813  | 13       | 2        | type4 | 136/136 | ??      | 142/142 | ??      | ??      | ??      | ??     | ??      |
| 120    | 190813  | 13       | 3        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     | ??      |
| 121    | 190813  | 13       | 4        | type2 | ??      | 106/114 | 158/160 | ??      | ??      | ??      | M      | 115/126 |
| 122    | 190813  | 13       | 5        | type3 | ??      | 116/140 | ??      | ??      | ??      | ??      | M      | 115     |
| 123    | 190813  | 13       | 6        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     | ??      |
| 124    | 190813  | 16       | 2        | noamp | 116/116 | 140/140 | ??      | ??      | ??      | ??      | ??     | ??      |
| 125    | 190813  | 16       | 3        | na    | ??      | ??      | ??      | 125/129 | ??      | ??      | ??     | ??      |
| 126    | 190813  | 16       | 4        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     | ??      |
| 127    | 190813  | 16       | 5        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     | ??      |
| 128    | 190813  | 16       | 7        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     | ??      |
| 129    | 190813  | 16       | 8        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     | ??      |
| 130    | 190813  | 16       | 9        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     | ??      |
| 131    | 190813  | 19       | 1        | type3 | 100/138 | 140/140 | 148/180 | 125/133 | 161/161 | 179/179 | M      | 115     |
| 132    | 190813  | 19       | 2        | type3 | ??      | ??      | ??      | 141/141 | 133/145 | 135/139 | ??     | ??      |
| 133    | 190813  | 24       | 1        | type3 | 128/128 | 118/132 | 158/170 | 141/141 | 185/205 | 167/187 | F      | 126     |
| 134    | 190813  | 24       | 2        | type3 | ??      | 116/116 | 156/156 | ??      | 173/177 | 127/159 | ??     | ??      |
| 135    | 190813  | 24       | 3        | type3 | 134/136 | 140/140 | 154/156 | 133/137 | 205/205 | 159/167 | F      | 126     |
| 136    | 190813  | 24       | 4        | type2 | ??      | ??      | 148/166 | ??      | ??      | ??      | F      | 126     |
| 137    | 190813  | 24       | 6        | type3 | 106/106 | ??      | ??      | 125/153 | 165/181 | 127/163 | ??     | ??      |
| 138    | 190813  | 24       | 7        | type8 | ??      | 124/140 | ??      | 113/113 | ??      | 123/123 | F      | 126     |
| 139    | 190813  | 24       | 8        | type4 | 134/134 | 106/106 | 152/156 | ??      | ??      | ??      | M      | 115/126 |
| 140    | 190813  | 26       | 1        | type3 | 136/144 | 140/140 | 150/150 | 145/161 | ??      | 151/167 | ??     | ??      |
| 141    | 190813  | 26       | 2        | type4 | ??      | 140/140 | 154/154 | 141/141 | 145/205 | 147/167 | M      | 115/126 |
| 142    | 190813  | 26       | 3        | type8 | ??      | ??      | ??      | 145/145 | 189/201 | 159/159 | ??     | ??      |
| 143    | 190813  | 26       | 4        | type7 | ??      | 120/140 | 152/152 | ??      | 149/169 | ??      | ??     | ??      |

Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4  | CRSP-01 | RT-5    | CAL-M   | CAL-O   | CAL-D   | Gender | Alleles |
|--------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|--------|---------|
| 144    | 190813  | 29       | 1        | type3 | ???     | ???     | 152/160 | 113/125 | 181/205 | 159/167 | M      | 115     |
| 145    | 190813  | 29       | 2        | type3 | ???     | ???     | ???     | 125/149 | 137/149 | 139/195 | ???    |         |
| 146    | 190813  | 29       | 3        | type3 | ???     | ???     | ???     | 141/141 | 149/149 | ???     | ???    |         |
| 147    | 190813  | 29       | 5        | type1 | ???     | 140/146 | 146/158 | 157/165 | 161/201 | 143/159 | M      | 115/126 |
| 148    | 190813  | 29       | 7        | na    | 134/134 | 138/140 | 154/154 | 133/157 | 205/205 | 159/167 | F      | 126     |
| 149    | 190813  | 31       | 1        | type8 | ???     | ???     | 152/152 | ???     | 169/169 | 139/139 | F      | 126     |
| 150    | 190813  | 31       | 2        | type8 | 132/134 | 140/140 | 146/154 | ???     | ???     | ???     | F      | 126     |
| 151    | 190813  | 31       | 4        | type3 | 108/108 | 110/110 | 152/152 | 129/145 | 149/185 | 159/183 | F      | 126     |
| 152    | 190813  | 31       | 5        | type8 | ???     | ???     | ???     | 133/149 | 133/193 | 131/179 | ???    |         |
| 153    | 190813  | 31       | 6        | type8 | 126/132 | 134/138 | 186/186 | 137/137 | 145/145 | 139/139 | F      | 126     |
| 154    | 190813  | 31       | 7        | type8 | ???     | ???     | ???     | 149/161 | 197/205 | 147/159 | ???    |         |
| 155    | 190813  | 31       | 8        | type5 | ???     | 144/144 | 150/150 | ???     | ???     | 127/127 | ???    |         |
| 156    | 190813  | 31       | 10       | type1 | ???     | ???     | ???     | 125/141 | 193/201 | 167/167 | ???    |         |
| 157    | 190813  | 32       | 3        | type8 | ???     | 118/118 | 140/162 | 169/169 | 177/181 | 147/159 | M      | 115/126 |
| 158    | 190813  | 32       | 4        | type3 | 114/160 | 126/132 | 148/148 | ???     | ???     | ???     | F      | 126     |
| 159    | 190813  | 32       | 7        | type3 | ???     | ???     | ???     | 141/169 | 173/213 | 159/159 | ???    |         |
| 160    | 190813  | 32       | 8        | type1 | ???     | ???     | ???     | 133/161 | 165/181 | 159/163 | ???    |         |
| 161    | 191126  | 6        | 1        | type4 | ???     | ???     | ???     | 129/129 | 145/185 | 147/147 | ???    |         |
| 162    | 191126  | 6        | 3        | na    | ???     | ???     | ???     | ???     | 161/161 | 163/163 | ???    |         |
| 163    | 191126  | 9        | 1        | type2 | ???     | ???     | ???     | 141/141 | 165/165 | 167/167 | ???    |         |
| 164    | 191126  | 9        | 2        | type2 | ???     | ???     | ???     | ???     | ???     | 139/139 | ???    |         |
| 165    | 191126  | 9        | 3        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 166    | 191126  | 9        | 4        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 167    | 191126  | 9        | 5        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    |         |
| 168    | 191126  | 9        | 6        | na    | ???     | ???     | ???     | 125/145 | 161/161 | 123/159 | ???    |         |
| 169    | 191126  | 9        | 7        | type9 | ???     | ???     | ???     | 125/129 | ???     | ???     | ???    |         |
| 170    | 191126  | 9        | 8        | type4 | ???     | ???     | ???     | ???     | 173/173 | ???     | ???    |         |
| 171    | 191126  | 9        | 11       | type3 | ???     | ???     | ???     | ???     | 149/149 | 147/147 | ???    |         |
| 172    | 191126  | 9        | 13       | type2 | ???     | ???     | ???     | 141/141 | ???     | ???     | ???    |         |

DNA methods to estimate wolf prey densities on the Olympic Peninsula, Washington

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Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4  | CRSP-01 | RT-5    | CAL-M   | CAL-O   | CAL-D   | Gender | Alleles |
|--------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|--------|---------|
| 173    | 191126  | 9        | 14       |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 174    | 191126  | 9        | 15       | type2 | ???     | ???     | ???     | 125/125 | ???     | ???     | ???    | ???     |
| 175    | 191126  | 9        | 16       |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 176    | 191126  | 12       | 4        | type2 | ???     | ???     | ???     | 125/137 | ???     | ???     | ???    | ???     |
| 177    | 191126  | 12       | 6        | type3 | ???     | ???     | ???     | 125/125 | 173/173 | 127/131 | ???    | ???     |
| 178    | 191126  | 13       | 1        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 179    | 191126  | 13       | 4        | type6 | ???     | ???     | ???     | 145/145 | 145/149 | 147/147 | ???    | ???     |
| 180    | 191126  | 13       | 5        | type7 | 96/96   | ???     | ???     | ???     | ???     | ???     | M      | 115     |
| 181    | 191126  | 13       | 7        | type7 | ???     | ???     | ???     | ???     | 161/161 | 127/131 | M      | 115     |
| 182    | 191126  | 14       | 1        | type2 | ???     | ???     | ???     | 149/149 | ???     | ???     | ???    | ???     |
| 183    | 191126  | 14       | 3        | type2 | ???     | ???     | ???     | 149/149 | 177/189 | 143/155 | ???    | ???     |
| 184    | 191126  | 14       | 4        | type7 | ???     | 110/122 | ???     | ???     | 153/161 | 123/151 | ???    | ???     |
| 185    | 191126  | 14       | 6        | type7 | ???     | ???     | ???     | ???     | 165/165 | 163/163 | ???    | ???     |
| 186    | 191126  | 14       | 9        | type3 | ???     | ???     | ???     | ???     | 173/177 | 127/171 | ???    | ???     |
| 187    | 191126  | 14       | 10       |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 188    | 191126  | 14       | 11       |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 189    | 191126  | 16       | 1        | type1 | ???     | ???     | ???     | ???     | 177/193 | 127/139 | ???    | ???     |
| 190    | 191126  | 16       | 2        | type1 | ???     | ???     | ???     | 133/133 | 165/165 | 131/167 | ???    | ???     |
| 191    | 191126  | 17       | 1        | type3 | ???     | ???     | 164/164 | ???     | 185/233 | 187/187 | F      | 126     |
| 192    | 191126  | 17       | 2        | type3 | 122/122 | 122/136 | 148/166 | 121/125 | 145/145 | 135/143 | F      | 126     |
| 193    | 191126  | 17       | 3        | type3 | ???     | ???     | 166/166 | 125/133 | 161/177 | ???     | M      | 115/126 |
| 194    | 191126  | 21       | 1        | type1 | ???     | 106/106 | ???     | ???     | 173/173 | 139/151 | F      | 126     |
| 195    | 191126  | 21       | 2        | type3 | 122/122 | 108/114 | 174/174 | 133/145 | ???     | 139/159 | F      | 126     |
| 196    | 191126  | 21       | 3        | type3 | 134/134 | 120/120 | 156/180 | 121/129 | 157/161 | ???     | F      | 126     |
| 197    | 191126  | 21       | 4        | type1 | ???     | 106/106 | ???     | ???     | ???     | 159/159 | M      | 115/126 |
| 198    | 191126  | 21       | 5        | type1 | ???     | 114/132 | 148/166 | 133/133 | 145/145 | 147/159 | M      | 115/126 |
| 199    | 191126  | 21       | 6        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 200    | 191126  | 21       | 7        | type3 | ???     | ???     | ???     | 133/133 | 145/145 | 147/159 | ???    | ???     |
| 201    | 191126  | 21       | 8        | na    | ???     | 110/110 | 172/172 | 169/169 | ???     | ???     | ???    | ???     |

Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4  | CRSP-01 | RT-5    | CAL-M   | CAL-O   | CAL-D   | Gender | Alleles |
|--------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|--------|---------|
| 202    | 191126  | 21       | 9        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 203    | 191126  | 24       | 1        | type3 | ???     | 112/112 | ???     | 141/157 | 141/145 | ???     | ???    | ???     |
| 204    | 191126  | 24       | 2        | type3 | ???     | ???     | 162/162 | 125/149 | 153/181 | 179/195 | M      | 115     |
| 205    | 191126  | 24       | 6        | type3 | ???     | ???     | ???     | ???     | ???     | ???     | M      | 115     |
| 206    | 191126  | 24       | 7        | type1 | ???     | ???     | ???     | 121/125 | 145/161 | 135/143 | ???    | ???     |
| 207    | 191126  | 24       | 8        | type7 | ???     | ???     | ???     | 121/125 | ???     | 127/135 | ???    | ???     |
| 208    | 191126  | 24       | 9        | na    | ???     | ???     | ???     | mixed   | mixed   | 159/179 | ???    | ???     |
| 209    | 191126  | 24       | 10       | type7 | ???     | ???     | ???     | 169/169 | 153/153 | ???     | ???    | ???     |
| 210    | 191126  | 26       | 1        | na    | ???     | ???     | ???     | 133/133 | ???     | ???     | ???    | ???     |
| 211    | 191126  | 26       | 2        | type3 | 120/120 | 124/124 | 146/146 | ???     | ???     | ???     | ???    | ???     |
| 212    | 191126  | 26       | 3        | type3 | ???     | 106/116 | ???     | 137/137 | 161/173 | 159/159 | F      | 126     |
| 213    | 191126  | 26       | 4        | type3 | ???     | 106/106 | 132/142 | 141/169 | 181/201 | 147/195 | M      | 115     |
| 214    | 191126  | 26       | 5        | type3 | ???     | ???     | 156/156 | ???     | 149/149 | 151/151 | ???    | ???     |
| 215    | 191126  | 26       | 6        | type3 | 118/118 | 106/106 | 146/154 | 125/161 | 165/193 | 159/159 | M      | 115/126 |
| 216    | 191126  | 26       | 7        | type3 | ???     | ???     | ???     | ???     | 201/205 | 179/179 | ???    | ???     |
| 217    | 191126  | 26       | 8        | type2 | ???     | 120/120 | 144/150 | 113/137 | ???     | ???     | ???    | ???     |
| 218    | 191126  | 31       | 1        | type1 | ???     | ???     | ???     | 135/145 | 169/177 | 135/167 | ???    | ???     |
| 219    | 270230  | 7        | 3        | type1 | 112/136 | 140/140 | 152/158 | 113/149 | 189/213 | 135/135 | M      | 115     |
| 220    | 270230  | 7        | 4        | na    | ???     | 110/124 | ???     | ???     | 177/225 | 167/183 | M      | 115     |
| 221    | 270230  | 11       | 11       | type7 | ???     | 104/104 | ???     | 125/125 | 149/173 | 127/147 | M      | 115/126 |
| 222    | 270230  | 13       | 1        | type2 | ???     | ???     | ???     | ???     | ???     | ???     | M      | 115     |
| 223    | 270230  | 13       | 2        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 224    | 270230  | 13       | 3        | type1 | 94/94   | 104/114 | 154/166 | ???     | ???     | 127/131 | ???    | ???     |
| 225    | 270230  | 13       | 4        | type7 | ???     | 104/126 | 166/166 | 113/113 | 169/169 | 135/135 | ???    | ???     |
| 226    | 270230  | 15       | 1        | type7 | ???     | ???     | ???     | ???     | 169/169 | ???     | ???    | ???     |
| 227    | 270230  | 15       | 2        | na    | ???     | ???     | ???     | 165/165 | 165/165 | 131/135 | ???    | ???     |
| 228    | 270230  | 15       | 3        | type7 | ???     | 138/138 | ???     | 165/165 | 169/185 | 135/135 | ???    | ???     |
| 229    | 270230  | 15       | 4        | type1 | 114/136 | 140/140 | 150/150 | ???     | 201/205 | 159/179 | ???    | ???     |
| 230    | 270230  | 15       | 5        | type1 | 114/114 | ???     | ???     | 125/125 | 217/217 | 131/131 | ???    | ???     |

Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4  | CRSP-01 | RT-5    | CAL-M   | CAL-O   | CAL-D   | Gender | Alleles |
|--------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|--------|---------|
| 231    | 270230  | 15       | 6        | type1 | ???     | ???     | ???     | 125/133 | 161/169 | 159/171 | ???    |         |
| 232    | 270230  | 15       | 7        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 233    | 270230  | 15       | 8        | type7 | ???     | 140/140 | ???     | 129/141 | 149/197 | 151/151 | F      | 126     |
| 234    | 270230  | 15       | 9        | type5 | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 235    | 270230  | 15       | 10       | type7 | ???     | ???     | 160/160 | 125/125 | ???     | 151/151 | ???    |         |
| 236    | 270230  | 15       | 11       | type2 | ???     | ???     | ???     | 133/141 | 173/185 | 187/187 | M      | 115     |
| 237    | 270230  | 15       | 12       |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 238    | 270230  | 15       | 13       | type3 | ???     | ???     | ???     | 133/133 | ???     | ???     | ???    | ???     |
| 239    | 270230  | 19       | 1        | type1 | 116/136 | 130/140 | 172/172 | 181/181 | 201/221 | 135/151 | M      | 115/126 |
| 240    | 270230  | 19       | 2        | type4 | ???     | 122/124 | ???     | ???     | ???     | 135/135 | M      | 115     |
| 241    | 270230  | 19       | 3        | type2 | 114/116 | 130/146 | 140/150 | 129/137 | 217/217 | 139/171 | M      | 115/126 |
| 242    | 270230  | 19       | 4        | type8 | ???     | 122/130 | 154/154 | 125/161 | 161/213 | 159/159 | F      | 126     |
| 243    | 270230  | 19       | 5        | type1 | ???     | 122/122 | 148/148 | 125/177 | 185/185 | ???     | M      | 115     |
| 244    | 270230  | 19       | 6        |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 245    | 270230  | 24       | 1        | type3 | 160/160 | 116/116 | 164/170 | ???     | ???     | ???     | M      | 115/126 |
| 246    | 270230  | 24       | 2        | type4 | ???     | 104/110 | ???     | 125/125 | 161/161 | ???     | F      | 126     |
| 247    | 270230  | 26       | 1        | type2 | ???     | 114/114 | ???     | ???     | ???     | ???     | M      | 115     |
| 248    | 270230  | 26       | 2        | type2 | ???     | ???     | ???     | ???     | 149/161 | 139/151 | ???    |         |
| 249    | 270230  | 26       | 3        | type1 | 94/94   | 104/104 | ???     | 149/149 | 181/221 | 151/183 | F      | 126     |
| 250    | 270230  | 26       | 4        | type1 | 160/160 | 108/108 | ???     | ???     | 149/173 | 123/127 | M      | 115     |
| 251    | 270230  | 26       | 5        | type5 | ???     | 106/106 | ???     | 117/121 | 153/225 | 127/127 | F      | 126     |
| 252    | 270230  | 26       | 6        | type1 | ???     | ???     | ???     | 149/153 | 157/173 | 147/147 | ???    |         |
| 253    | 270230  | 26       | 7        | type2 | 94/94   | 124/124 | 150/158 | 161/181 | 177/177 | 139/151 | M      | 115/126 |
| 254    | 270230  | 26       | 8        | type1 | ???     | ???     | 144/148 | ???     | 181/181 | ???     | ???    |         |
| 255    | 270230  | 26       | 20       |       | ???     | ???     | ???     | ???     | ???     | ???     | ???    | ???     |
| 256    | 270230  | 26       | 21       | type6 | ???     | ???     | ???     | ???     | ???     | 161/161 | ???    | ???     |
| 257    | 270230  | 27       | 7        | type6 | ???     | ???     | ???     | ???     | 197/197 | 151/151 | ???    |         |
| 258    | 270230  | 27       | 9        | type5 | 116/116 | ???     | ???     | ???     | 221/221 | 147/147 | M      | 115     |
| 259    | 281202  | 7        | 1        | type3 | 110/114 | 152/152 | 146/148 | ???     | 149/149 | 135/159 | M      | 115/126 |

Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4  | CRSP-01 | RT-5    | CAL-M   | CAL-O   | CAL-D   | Gender | Alleles |
|--------|---------|----------|----------|-------|---------|---------|---------|---------|---------|---------|--------|---------|
| 260    | 281202  | 7        | 2        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     | ??      |
| 261    | 281202  | 7        | 3        | type4 | ??      | 126/126 | 168/168 | 117/117 | 141/181 | 143/163 | F      | 126     |
| 262    | 281202  | 7        | 4        | type1 | ??      | ??      | ??      | ??      | 145/145 | 159/195 | ??     |         |
| 263    | 281202  | 7        | 5        | type5 | ??      | 118/128 | ??      | ??      | 165/197 | 195/195 | M      | 115/126 |
| 264    | 281202  | 7        | 6        | type3 | 128/128 | 140/158 | 158/166 | ??      | ??      | ??      | F      | 126     |
| 265    | 281202  | 12       | 1        | type5 | 116/132 | 134/134 | 140/146 | 125/137 | 201/233 | 127/159 | M      | 115     |
| 266    | 281202  | 12       | 2        | type5 | 114/114 | 106/106 | 164/164 | 141/161 | 161/173 | 171/183 | M      | 115     |
| 267    | 281202  | 12       | 3        | type1 | 160/160 | ??      | 164/164 | ??      | ??      | ??      | ??     |         |
| 268    | 281202  | 12       | 4        | type3 | 134/134 | ??      | ??      | ??      | ??      | ??      | M      | 115     |
| 269    | 281202  | 12       | 5        | type3 | ??      | ??      | ??      | ??      | 149/149 | 151/151 | F      | 126     |
| 270    | 281202  | 13       | 1        | type3 | 114/114 | 124/124 | 144/144 | ??      | 189/201 | 135/135 | M      | 115/126 |
| 271    | 281202  | 13       | 2        | type2 | ??      | ??      | ??      | 113/113 | ??      | ??      | ??     |         |
| 272    | 281202  | 13       | 3        | type7 | 94/94   | 136/136 | ??      | ??      | ??      | 147/147 | M      | 115/126 |
| 273    | 281202  | 13       | 4        | type7 | ??      | 132/134 | ??      | ??      | ??      | ??      | M      | 115/126 |
| 274    | 281202  | 13       | 5        | type3 | ??      | ??      | ??      | 169/169 | 165/201 | ??      | M      | 115/126 |
| 275    | 281202  | 13       | 6        | type2 | ??      | 114/114 | ??      | 169/181 | 157/213 | 155/159 | F      | 126     |
| 276    | 281202  | 13       | 7        | type5 | 110/110 | 140/140 | 144/160 | ??      | 181/205 | 159/159 | M      | 115     |
| 277    | 281202  | 14       | 1        | type3 | 136/138 | 138/138 | ??      | 165/165 | 161/161 | ??      | ??     |         |
| 278    | 281202  | 14       | 2        | type1 | ??      | 114/114 | ??      | 113/113 | 165/165 | 147/147 | M      | 115     |
| 279    | 281202  | 14       | 3        | type3 | ??      | ??      | ??      | 161/169 | 165/201 | 163/163 | ??     |         |
| 280    | 281202  | 14       | 4        | type5 | 114/114 | 126/126 | ??      | 133/169 | 161/233 | 139/159 | F      | 126     |
| 281    | 281202  | 14       | 5        | type3 | ??      | 114/114 | 152/152 | 117/125 | 197/197 | 195/195 | M      | 115/126 |
| 282    | 281202  | 14       | 6        | type2 | 132/136 | 140/140 | 160/160 | ??      | ??      | ??      | F      | 126     |
| 283    | 281202  | 14       | 7        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     |         |
| 284    | 281202  | 14       | 8        | type4 | 102/102 | 106/106 | 142/186 | 165/165 | 193/193 | 195/195 | F      | 126     |
| 285    | 281202  | 16       | 1        | type3 | 126/128 | 140/140 | 158/158 | 141/141 | 201/201 | 163/179 | M      | 115/126 |
| 286    | 281202  | 16       | 2        | type1 | 134/136 | 140/140 | 158/158 | 141/141 | 181/205 | 159/171 | M      | 115/126 |
| 287    | 281202  | 21       | 1        |       | ??      | ??      | ??      | ??      | ??      | ??      | ??     |         |
| 288    | 281202  | 21       | 2        | type1 | ??      | ??      | ??      | 113/113 | ??      | ??      | ??     |         |

Appendix A: DNA Results from Black-tailed Deer Pellets Collected on Olympic Peninsula.

| Sample | Plot ID | Transect | Specimen | RFLP  | TEXAN4 | CRSP-01 | RT-5 | CAL-M   | CAL-O   | CAL-D   | Gender | Alleles |
|--------|---------|----------|----------|-------|--------|---------|------|---------|---------|---------|--------|---------|
| 289    | 281202  | 21       | 3        | type7 | ???    | ???     | ???  | ???     | 169/169 | ???     | M      | 115     |
| 290    | 281202  | 21       | 4        | type3 | ???    | ???     | ???  | 121/121 | 173/177 | 175/179 | ???    | ???     |
| 291    | 281202  | 21       | 5        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 292    | 281202  | 24       | 1        | type7 | ???    | ???     | ???  | 125/165 | 169/169 | ???     | ???    | ???     |
| 293    | 281202  | 24       | 2        | type3 | ???    | ???     | ???  | ???     | 153/153 | 151/151 | ???    | ???     |
| 294    | 281202  | 24       | 3        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 295    | 281202  | 24       | 4        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 296    | 281202  | 24       | 5        | type2 | 94/94  | 114/114 | ???  | ???     | 165/165 | 167/167 | M      | 115     |
| 297    | 281202  | 24       | 6        | type5 | ???    | ???     | ???  | ???     | 153/153 | 139/139 | ???    | ???     |
| 298    | 281202  | 27       | 2        | type3 | ???    | ???     | ???  | 121/153 | 153/169 | 167/187 | ???    | ???     |
| 299    | 281202  | 27       | 3        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 300    | 281202  | 27       | 5        | type1 | ???    | ???     | ???  | ???     | 157/157 | 155/179 | ???    | ???     |
| 301    | 281202  | 27       | 6        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 302    | 281202  | 27       | 7        | type4 | ???    | ???     | ???  | ???     | ???     | ???     | ???    | 126     |
| 303    | 281202  | 27       | 8        | type4 | ???    | ???     | ???  | 125/141 | 173/213 | 123/143 | M      | 115     |
| 304    | 281202  | 27       | 9        | type3 | ???    | ???     | ???  | 141/157 | 145/157 | 131/139 | ???    | ???     |
| 305    | 281202  | 28       | 1        | type2 | ???    | ???     | ???  | 133/133 | 165/181 | 135/143 | ???    | ???     |
| 306    | 281202  | 28       | 2        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 307    | 281202  | 28       | 3        | type2 | ???    | ???     | ???  | 125/125 | 161/185 | 147/163 | M      | 115     |
| 308    | 281202  | 28       | 4        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 309    | 281202  | 28       | 5        | type2 | ???    | ???     | ???  | 121/161 | 149/161 | 139/139 | ???    | ???     |
| 310    | 281202  | 28       | 7        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 311    | 281202  | 28       | 9        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 312    | 281202  | 30       | 1        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 313    | 281202  | 32       | 1        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 314    | 281202  | 32       | 2        |       | ???    | ???     | ???  | ???     | ???     | ???     | ???    | ???     |
| 315    | 281202  | 32       | 3        | type1 | ???    | ???     | ???  | ???     | 177/177 | 127/127 | ???    | ???     |
| 316    | 281202  | 32       | 4        | type3 | ???    | ???     | ???  | ???     | 165/189 | ???     | ???    | ???     |

Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

Vail Deer

99R6-015 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATTACATTACATTCAACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATATRC  
CCCAGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTACTTAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAUTACAGCCCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAUTGCATCTTGAGCA  
TCCTCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTATTTC  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTTC  
CATGGTTCAACCCTATAACTCTTTCCCCCCCC—CGGAAA

99R6-018 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATTACATTACATTCAACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCAGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAAATCGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAUTACAGCCCCATGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTTKGGGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAUTGCATCTTGAGCA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TCCCCATAATGGTAGGCACGAGCATCATAATTAAATGGTAACAGGACATAGCTG  
TAATGGTGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC---CAGAAA

99R6-027 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATACTATGTATAATAGTACATTACATTATAC  
CCCAGTCTTAAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCATGCTTAAAGCAAGTACATACAACCAC  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGCCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGGTGAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAATCGCCCCTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGACTAACATGCCCAGTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATTGTAGCTGGACTTAATGCACTTGGAGCA  
TCCCCATAATGGTAGGCACGAGCATCATAATTAAATGGTAACAGGACATAATTG  
TAATGGTGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC---CAGAAA

99R6-045 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCAGTCTTAAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCATGCTTAAAGCAAGTACATACAACCAC  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGCCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGGTGAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTACTTAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAATCGCCCCTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGACTAACATGCCCAGTCACACATAACTGTGATGTCAT

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

ACATTGGTATTTAATTTGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTGAGCA  
TCCTCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTTTTCCCCCCCC—CGGAAA

99R6-049 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTCCTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCAGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATAATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCGCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTACTTAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCATGCTCACACATAACTGTATGTCAT  
ACATTGGTATTTAATTTGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTGAGCA  
TCCTCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTTT-TCCCCCCCC-CGGAAA

99R6-053 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTCCTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATACTATGTATAATAGTACATTACATTATTC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AACAGTACATCATATTATACCCCAGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATAATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCGCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TCTTCAGGGCCATCTCATCTAAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAGTACTAATCAGCCATGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTTGGGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATCATAATTAAATGTAACAGGACATAGTTG  
TAATGGTGAGTATGGACATTGCAGTCATGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC—CGGAAA

99R6-063 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTAAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCTATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGCCCTAGATCACGAGCTTAATTACCA  
TGCCCGGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACATTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAGTACTAATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTGGGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATCATAATTAAATGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCATGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC---CGGAAA

99R6-066 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATACTATGTATAATAGTACATTACATTATAC  
CCCATGCTTAAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCTATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCGCCCTAGATCACGAGCTTAATTACCA  
TGCCCGGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

CCCATATATCGTGGGGTAGCTATTAAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAGTGACTAATCAGCCATGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTTGGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTG  
TAATGGTGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC---CAGAAA

99R6-069 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATACTATGTATAATAGTACATTACATTATTC  
CCCATGCTATAAGCAAGTACATAAAATTAAATGTATTAAAGACATATTATGTAT  
AACAGTACATCATATTATACCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTC  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAGTGACTAATCAGCCATGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTTKGGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC---CGGAAA

99R6-071 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTATAAGCAAGTACATAAAATTAAATGTATTAAAGACATATCATGTAT  
AATAGTACATCATATTATACCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTC  
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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TCCTTCTGCCAACATGCGTATCCGTCCCCAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTATTTTGGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCATCTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGTAACAGGACATAGTTG  
TAATGGTAGTATGGACATTGCAGTCATGGTAGCAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC—CGGAAA

99R6-076 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCATTGCTTATAAGCAAGTACATACAACCATT  
TACAGTACATAGTACATGCAATTATAATCGTCCATAGCACATTAGTCAAA  
TCCTTCTGCCAACATGCGTATCCGTCCCCAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCATCTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAGCAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC—CGGAAA

99R6-089 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

AATAGTACATCATATTATACCCTATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCCAGTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTCAGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC—CGGAAA

99R6-095 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTAAGTACTAGGACATACTATGTATAATAGTACATTACATTATAC  
CCCATGCTTAAAGCAAGTACATAAAATTAAATGTATTAAAGACATATTATGTAT  
AATAGTACATCATATTATACCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCCAGTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTTCAGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAGTTG  
TAATGGTGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC—CAGAAA

99R6-096 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TAAAATTAAATGTACTAGGACATACTATGTATAATAGTACATTACATTATATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAGTGAUTACAGCCATGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTTGGGGGATGCTTGGACTCAGCTATGGCCGTCA  
AAGGCCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTG  
TAATGGTGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC---CAGAAA

99R6-099 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTTCTAAAAAAATTCAATAA  
TTAATACAGTTTCACCTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTACTTAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAGTGAUTACAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGGATGCTTGGACTCAGCTATGGCCGTCA  
AAGGCCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCTCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT-TCCCCCC—CGGAAA

99R6-107 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTTCTAAAAAAATTCAATAA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TTTAATACAGTTTCACTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTAAGGACATACTATGTATAATAGTACATTACATTATATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTTAACAGACATATTATGTAT  
AATAGTACATCATATTATACCCCCATGCTTATAAGCAAGTACATACAACCAC  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGACTAACATCAGCCATGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTTCAGGGGGATGCTTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCCATAATGGTAGGCAAGAGCATACATAATTAAATGTAACAGGACATAATTG  
TAATGGTGAGTATGGACATTGCAGTCAATGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC—CAGAAA

99R6-112 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTTAATACAGTTTCACTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTAAGGACATACTATGTATAATAGTACATTACATTATTTAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTTAACAGACATATTATGTAT  
AACAGTACATCATATTATACCCCCATGCTTATAAGCAAGTACATACAACCAC  
TTACAGTACATAGTACATGTAATTATTAAATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAAATCGCCCCTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGACTAACATCAGCCATGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTTCAGGGGGATGCTTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCCATAATGGTAGGCAAGAGCATACATAATTAAATGTAACAGGACATAATTG  
TAATGGTGAGTATGGACATTGCAGTCAATGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC—CGGAAA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

99R6-119 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACCAAGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTACATACCCCCATGCTTATAAGCAAGTACATACAATCAT  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGCCCTAGATCACGAGCTTAACCTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATACTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCACTTGAGCA  
TCCCCATAATGGTAGGCACATTGCACTGCAATTAAATGGTAACAGGACATAGCTG  
TAATGGTAGTATGGACATTGCACTGCAATTGGTAGCAGGACATAATTATTATTC  
CATGGTTAACCCCTATAACTCTT---TCCCCCC---CGGAAA

99R6-122 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACCAAGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTACATACCCCCATGCTTATAAGCAAGTACATACAATCAT  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGCCCTAGATCACGAGCTTAACCTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATACTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCACTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATCGTAATTAAATGGTAACAGGACATAGCTG

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TAATGGTGAGTATGGACATTGCACTGGTAGCAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCCCCC—CGGAAA

99R6-126 1

TCCACAAAATCCAAGAGCCTTGTCACTTAAATTCTTAAAAATTCAATAA  
TTAACATACAGTTTCACTAACAGCCATTACATTACATTCAACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATACTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AACAGTACATCATATTATACCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAAGTC  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTGGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCACTTGGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAGTTG  
TAATGGTGAGTATGGACATTGCACTGGTAGCAGTCAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCCCC---CGGAAA

99R6-127 1

TCCACAAAATCCAAGAGCCTTGTCACTTAAATTCTTAAAAATTCAATAA  
TTAACATACAGTTTCACTAACAGCCATTACATTACATTCAACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATACTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAAGTC  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTGGGGGATGCTGGACTCAGCTATGGCGTCA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTACTGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATCATAATTAAATGGTAACAGGACATAGTTG  
TAATGGTGAGCATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC—CAGAAA

99R6-133 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATACTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAATCGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGACTIONCAGCCATGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAAATTTKGGGGGGATGCTTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTACTGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATCATAATTAAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC—CAGAAA

99R6-138 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATGCCCTATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAATCGCCACTCTTCCCTAAATAAGACAT

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

CTCGATGGACTAGTGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACAGCATTGAGCA  
TCCCCATAATGGTAGGCACGAGCATACAATTAAATGGTAACAGGACATAAGTTG  
TAATGATGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC—SGGAAA

99R6-148 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCTATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGCCATCTCACCTAAAATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACAGCATTGAGCA  
TCCCCATAATGGTAGGCACGAGCATACAATTAAATGGTAACAGGACATAAGTTG  
TAATGATGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC—CGGAAA

99R6-159 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCTATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

CCCATATATTGTGGGGTAGCTATTAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAGTGACTAACATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTGAGCA  
TCCCATAATGGTAGGCACGAGCATACATAATTAAATGGTAACAGGACATAATTATT  
TAATGATGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATTATT  
CATGGTTCAACCCTATAACTCTT--TCCCCCC—CGGAAA

99R6-166 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTTCTAAAAAAATTCAATAA  
TTAATACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATACTATGTATAATAGTACATTACATTATAC  
CCCATGCTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAGTC  
TCCTTCTGCCAACATGCGTATCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATCGTGGGGTAGCTATTAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAGTGACTAACATCAGCCATGCTCACACATAACTGTGATGTCAT  
GCATTGGTATTTAATTTGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTGAGCA  
TCCCATAATGGTAGGCACAGAGCATACATAATTAAATGGTAACAGGACATAATT  
TAATGGTGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATTATT  
CATGGTTCAACCCTATAACTCTT--TCCCCCC---CAGAAA

99R6-167 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTTCTAAAAAAATTCAATAA  
TTAATACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCACATTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAGTC  
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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TCCTTCTGCCAACATGCGTATCCGTCCCCAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTACTTAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCCCTGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTGGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCATCTGAGCA  
TCCTCATAATGGTAGGCACGAGCATATAATTAAATGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC—CGGAAA

99R6-168 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTTCTAAAAATTCAATAA  
TTAACAGTTTCACTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATATRC  
CCCATGCTTAAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCTATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATAATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCGTCCCCAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCCCTGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCATCTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC—CGGAAA

99R6-175 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTTCTAAAAATTCAATAA  
TTAACAGTTTCACTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATATAC  
CCCATGCTTAAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

AATAGTACATCATATTATACCCTATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAATCGCCCCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCCAGTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTCAGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT-TCCCCCC---CGGAAA

99R6-179 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAATACAGTTTCACTTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATRC  
CCCATGCTTAAAGCAAGTACATAAAATTAAATGTATTAAAGACATATTATGTAT  
AATAGTACATCATATTATACCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATAATCGTCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTACTTAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAATCGCCCCTTCCCTAAATAAGACAT  
CTCGATGGACTAGTGAATCAGCCCAGTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTCAGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCATCTTGAGCA  
TCCCTATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT-TCCCCCC---CGGAAA

Physt Deer

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

99R6-226 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATTACATTACATTCAACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAAGACATATTATGTAT  
AATAGTACATCATACTATACCCCCATGCTTATAAGCAAGTACATACAACCACAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGGATGCTTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCACTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTTC  
CATGGTTAACCCCTATAACTCTT--TCCCCCC—SGGAAA

99R6-227 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATTACATTACATTCAACACTACCACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAAGACATATTATGTAT  
AATAGTACATCACACTATACCCCCATGCTTATAAGCAAGTACATACAACCACAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAAATCGCCCCTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGGATGCTTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCACTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAAGTTG

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTTT-TCCCCCCCCC-GGGAAA

99R6-228 1

TCCACAAAATCCAAGAGCCTTGTCACTTAAATTCTTAAAAATTCAATAA  
TTAACATACAGTTTCACTAACAGCCATTACATTACATTCAACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATACTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAAGTGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTTT--TCCCCCCCCC-GGGAAA

99R6-237 1

TCCACAAAATCCAAGAGCCTTGTCACTTAAATTCTTAAAAATTCAATAA  
TTAACATACAGTTTCACTAACAGCCATTACATTACATTCAACACTACCACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCACAATACACAGCTTAAATTGGGGGATGCTGGACTCAGCTATGGCGTCA  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAAATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGATGCTGGACTCAGCTATGGCGTCA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTACTGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATCATAATTAAATGGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCCCGGGAAA

99R6-238 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATATTACATTTCACACTACCACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCACACTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAGTCAA  
TCCTTCTTGCACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAAATTTGGGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTACTGCATCTGAGCA  
TCCCCATAATGGTAGGCACGAGCATCATAATTAAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCCGGGAAA

99R6-239 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCACACTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAGTCAA  
TCCTTCTTGCACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAATGCCACTCTTCCCTAAATAAGACAT

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

CTCGATGGACTAATGACTAACAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACAGTCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTACAGTCATGGTAACAGGACATAATTATTATTC  
CATGGCTCAACCCTATAACTCTT--TCCCCCC—GGAAA

99R6-241 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTAAAAATTCAATAA  
TTAATACAGTTTCACCTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTATAAGCAAGTACATAGAATTATGTATTAAGACATACTATGTAT  
AATAGTACATCACATTATACCCATGCTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCATAGCACATTAAAGTCAA  
TCCCTCTTGTCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTCCCCCTAAATAAGACAT  
CTCGATGGACTAGTACTAACAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACAGTCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAAGTTG  
TAATGGTGAGTATGGACATTGCAGTCATGGTAACAGGACATAATCATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC—CGGAAA

99R6-242 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTAAAAATTCAATAA  
TTAATACAGTTTCACCTAACAGCCATATTACATTTCACACTACCACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTATAAGCAAGTACATAAAATTATGTATTAAGACATATTATGTAT  
AATAGTACATCACACTATACCCATGCTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

CCCATATATTGTGGGGTAGCTATTAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCATCTAAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAACATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTATT  
TAATGATGAGTATGGACATTGCACTGGTAACAGGACATAATTATT  
CATGGTTCAACCCTATAACTCTT?-CCCCCCCCC-GGGAAA

99R6-246 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTTCTAAAAAAATTCAATAA  
TTAATACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATACTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAACATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATT  
TAATGATGAGTATGGACATTACAGTCAATGGTAACAGGACATAATTATT  
CATGGCTCAACCCTATAACTCTT--CCCCCCCCC-GGGAAA

99R6-248 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTTCTAAAAAAATTCAATAA  
TTAATACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATACTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTCAAA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TCCTTCTGCCAACATGCGTATCCGTCCCCAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATAATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTCAGGGCATCTCACCTAAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTCAGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTACAGTCATGGTAACAGGACATAATTATTATTC  
CATGGCTCAACCCTATAACTCTT---TCCCCCCCGGGAAA

99R6-249 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTATAAGCAAGTACATAAAATTAAATGTATCAGGACATATTGTAT  
AATAGTACATCATATTATACCCATGCTTATAAGCAAGTACATACAACCAC  
TTACAGTACATAGTACATGCAATTATAATCGTCCATAGCACATTAGTCAAA  
TCCTTCTGCCAACATGCGTATCCGTCCCCAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATACATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTCAGGGCATCTCACCTAGAACGCCCAGCTTCCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTCAGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGTAACAGGACATAATTG  
TAATGGTGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC---CGGAAA

99R6-251 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATRC  
CCCATGCTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

AATAGTACATCATACTATACCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTCAGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC-GGGAAA

99R6-252 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTAATTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTAAAGCAAGTACATAAAATTAAATGTATAAGACATATTATGTAT  
AATAGTACATCATACTATACCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTCAGGGGATGCTGGACTCAGCTATGGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAATGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC-GGGAAA

99R6-253 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATATAC  
CCCATGCTTATAAGCAAGTACATAGAATTATGTATTAAGACATACTATGTAT  
AATAGTACATCACATTATACCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAAGTCAAA  
TCCCTTCTTGTCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGGTGAAACCAACAAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCCCTAAATAAGACAT  
CTCGATGGACTAGTGAUTACAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGGATGCTTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATTGTAGCTGGACTTAACTGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATCATTATTC  
TAATGGTGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATCATTATTC  
CATGGTTCAACCCTATAACTCTTT-TCCCCCC—CGGAAA

99R6-254 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA  
TTAACACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATCAGGACATATTATGTAT  
AATAGTACATCATATTATACCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCCATAGCACATTAAAGTCAAA  
TCCCTTCTTGCACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGGTGAAACCAACAAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAGAACATGCCACTCTTCCCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTGGGGGGATGCTTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATTGTAGCTGGACTTAACTGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTATTATTC  
TAATGGTGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTTT--TCCCCCC—CGGAAA

99R6-255 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAAATTCAATAA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TTTAATACAGTTTCACTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTAAGGACATATTATGTATAATAGTACATTACATTATATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTTAAGACATATTATGTAT  
AATAGTACATCATACTATACCCCCATGCTTATAAGCAAGTACATACAACCAC  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAACATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGATGCTTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATACATAATTAAATGGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC-CCC-GGGAAA

99R6-257 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTTAATACAGTTTCACTAACAGCCATTACATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTAAGGACATATTATGTATAATAGTACATTACATTATATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTTAAGACATATTATGTAT  
AATAGTACATCATACTATACCCCCATGCTTATAAGCAAGTACATACAACCAC  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAACATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGATGCTTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATACATAATTAAATGGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCC-CCC-GGGAAA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

99R6-258 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATTACATTACATTCAACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATCAGGACATATTATGTAT  
AATAGTACATCATATTATACCCCCATGCTTATAAGCAAGTACATACAACCAC  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAGAACATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAACATCAGCCCAGCTCACACATAACTGTATGTCAT  
ACATTGGTATTTAATTTCAGGGGGATGCTTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACATGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAGTTG  
TAATGGTAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTAACCCCTATAACTCTT--TCCCCCC—CGGAAA

99R6-259 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATTACATTACATTCAACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAGAACATTAAATGTATTAAAGACATACACCAC  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAAA  
TCCTTCTGTCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAACATCAGCCCAGCTCACACATAACTGTATGTCAT  
ACATTGGTATTTAATTTCAGGGGGATGCTTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACATGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTG

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TAATGGTGAGTATGGACATTGCAGTCATGGTAACAGGACATAATCATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC—CGGAAA

99R6-260 1

TCCACAAAATCCAAGAGCCTTGTCACTTAAATTCTTAAAAATTCAATAA  
TTAACATACAGTTTCACTAACAGCCATTACATTACATTCAACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATACTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTC  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTCAGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAAGTACATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC—GGGAAA

99R6-261 1

TCCACAAAATCCAAGAGCCTTGTCACTTAAATTCTTAAAAATTCAATAA  
TTAACATACAGTTTCACTAACAGCCATTACATTACATTCAACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATACTATACCCCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTC  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGTGAAACCAACAACCCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTCAGGGGGATGCTGGACTCAGCTATGCCGTCA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTACTGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATCATAATTAAATGGTAACAGGACATAGTTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT---TCCCCCCCGGGAAA

99R6-264 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTTCTAAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAGAATTATGTATTAAAGACACTATGTAT  
AATAGTACATCACATTATACCCATTGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCATAGCACATTAAAGTCAA  
TCCCTTCTTGTCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACATTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTCTT-  
CCCCTTAAATAAGACATCTCGATGGACTAGTGACTAATCAGCCCAGCTCACA  
CATAACTGTGATGTCATACATTGGTATTTAATTTKGGGGGGATGCTTGGGA  
CTCAGCTATGCCGTCAAAGGCCCGACCCGGAGCATATATTGTAGCTGGACT  
TAACTGCATCTTGAGCATCCCCATAATGGTAGGCACGAGCATATAATTAG  
GTAACAGGACATAGTTGTAATGGTAGTATGGACATTGCAGTCATGGTAAC  
AGGACATAATCATTATTCCATGGTTCAACCCTATAACTCTTT-  
TCCCCCC—CGGAAA

99R6-265 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAATTTCTAAAAAATTCAATAA  
TTAACATACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGCATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATCAGGACATATTATGTAT  
AATAGTACATCATATTATACCCATTGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAATCGTCATAGCACATTAAAGTCAA  
TCCTTCTTGTGCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACATTATCAGACATCTGGTTCTT

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TCTTCAGGGCCATCTCACCTAGAATGCCACTTTCCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAACAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGTAACAGGACATAAGTTG  
TAATGGTGAGTATGGACATTGCAGTCATGTAACAGGACATAATTATTATTC  
CATGGTCACCCTATAACTCTT--TCCCCCC—CGGAAA

99R6-267 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAGAATTAAATGTATTAAGACATACTATGTAT  
AATAGTACATCACATTATACCCCTATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTAAATCGTCCATAGCACATTAAAGTCAA  
TCCCTCTTGTCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCCGGTGAAACCAACAACCCGCTTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACATTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATGCCACTTTCCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAACAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGGATGCTGGACTCAGCTATGGCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACGCATCTGAGCA  
TCCCCATAATGGTAGGCACGAGCATATAATTAAATGTAACAGGACATAATTG  
TAATGGTGAGTATGGACATTGCAGTCATGTAACAGGACATAATCATTATTC  
CATGGTCACCCTATAACTCTT-TCCCCCC—CGGAAA

99R6-268 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTTAAAAATTCAATAA  
TTAACAGTTTCACTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTATACGGGTATAGTACA  
TAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCACATTACCCATGCTTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCCATAGCACATTAAAGTCAA  
TCCTTCTGCCAACATGCGTATCCCGTCCCTAGATCACGAGCTTAATTACCA

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TGCCGCGTAAACCAACCAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAACAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACAGGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATACATAATTAAATGGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT—TCCCCCC—CCGGAAA

99R6-269 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
GCACAAACTGCATAATAACACATGCATATATAACTTACGGGTATAGTACA  
AAAAATTAAATGTAAGGACATATTATGTATAATAGTACATTACATTATAC  
CCATGCTATAAGCAAGTACATAAAATTAAATGTATTAAGACATATTATGTAT  
AATAGTACATCATACTATACCCCCATGCTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATTGATCGTCATAGCACATTAAAGTCAAA  
TCCTTCTGCCAACATGCGTACCGTCCCTAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACCAACCCGGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAAAATCGCCCCTCTTCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAACAGCCCAGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTGGGGGATGCTGGACTCAGCTATGCCGTCA  
AAGGCCCGACCCGGAGCATATATTGTAGCTGGACTTAACAGGCATCTTGAGCA  
TCCCCATAATGGTAGGCACGAGCATACATAATTAAATGGTAACAGGACATAATTG  
TAATGATGAGTATGGACATTGCAGTCATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT—TCCCCCC—CCGGAAA

99R6-270 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTAAAAATTCAATAA  
TTAACAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATATAACTTACGGGTATAGTACA  
AAAAATTAAATGTAAGGACATATTATGTATAATAGTACATTACATTATAC  
CCATGCTATAAGCAAGTACATAAAATTAAATGTATCAGGACATATTATGTAT  
AATAGTACATCATAATTACCCCCATGCTATAAGCAAGTACATACAACCAT

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Appendix B: Control Region basepair sequences of mitochondria DNA from black-tailed deer, Washington

TTACAGTACATAGTACATGCAATTATAATCGCCATAGCACATTAAGTC  
AA  
TCCTTCTGCCAACATGCGTATCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAGAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGATGCTTGGACTCAGCTATGCCGTCA  
AAGGCCCCGACCCGGAGCATATATTGTAGCTGGACTTAACTGCATCTGAGCA  
TCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTATTATTC  
TAATGGTGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC---CGGAAA

99R6-271 1

TCCACAAAATCCAAGAGCCTGTCAGTATTAAATTCTAAAAAAATCAATAA  
TTAACATAGTTTCACTTAACAGCCATATTACATTTCACACTACTACCT  
ACACAAACTGCATAATAACACATGCATATAACTTATACGGGTATAGTACA  
AAAAATTAAATGTACTAGGACATATTATGTATAATAGTACATTACATTATAC  
CCCATGCTATAAGCAAGTACATAAAATTAAATGTATCAGGACATATTGTAT  
AATAGTACATCATATTATACCCATGCTATAAGCAAGTACATACAACCAT  
TTACAGTACATAGTACATGCAATTATAATCGCCATAGCACATTAAGTC  
AA  
TCCTTCTGCCAACATGCGTATCCGTCCCCTAGATCACGAGCTTAATTACCA  
TGCCGCGTAAACCAACAACCGCTGGCAGGGATCCCTCTCGCTCCGGG  
CCCATATATTGTGGGGTAGCTATTAAATGAACCTTATCAGACATCTGGTTCTT  
TCTTCAGGGCCATCTCACCTAGAATGCCACTCTTCCCCTAAATAAGACAT  
CTCGATGGACTAATGACTAATCAGCCATGCTCACACATAACTGTGATGTCAT  
ACATTGGTATTTAATTTKGGGGGATGCTTGGACTCAGCTATGCCGTCA  
AAGGCCCCGACCCGGAGCATATATTGTAGCTGGACTTAACTGCATCTGAGCA  
TCCCATAATGGTAGGCACGAGCATATAATTAAATGGTAACAGGACATAATTATTATTC  
TAATGGTGAGTATGGACATTGCAGTCAATGGTAACAGGACATAATTATTATTC  
CATGGTTCAACCCTATAACTCTT--TCCCCCC---CGGAAA

APPENDIX C: Protocols for PCR amplification of six microsatellites , mitochondria control region RFLPs, and sequencing processes for black-tailed deer, Washington state.

#### Black-Tailed Deer Pellet Extraction and PCR Protocols

##### *a. Deer pellet microsatellite PCR amplification 50 °C Multiplex*

.5 ul 10X Promega Buffer (1X)  
0.9 ul 25mM MgCl<sub>2</sub> (1.5mM)  
2.4 ul dNTPs (0.2mM)  
0.15 ul Taq (0.5 U) (Promega)  
0.24 ul CRSP-1FHEX (0.16 uM)  
0.24 ul CRSP-1R (0.16 uM)  
0.35 ul TEXAN-4FFAM (0.23 uM)  
0.35 ul TEXAN-4R (0.23 uM)  
0.35 ul RT-5FTET (0.23 uM)  
0.35 ul RT-5R (0.23 uM)  
0.25 ul Y41-FTET  
0.25 ul Y121-R  
0.25 ul ZFX/Y-FTET  
0.25 ul ZFX/Y-R  
2.0 ul genomic DNA (~25-50 ng)  
5.2 ul water

15 ul total volume

##### i. Cycling (MJ-100 Thermocycler):

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APPENDIX C: Protocols for PCR amplification of six microsatellites , mitochondria control region RFLPs, and sequencing processes for black-tailed deer, Washington state.

1. 94C:00
  2. 92C:30
  3. 50C:30
  4. 72C:30
- repeat steps 2-4 for 35 cycles
5. 72C 4:00
  6. 4C hold

**b. Deer pellet microsatellite PCR amplification California Tetramers**

1.5 ul 10X Promega Buffer  
1.2 ul 25mM MgCl<sub>2</sub> (2.0mM)  
2.4 ul dNTPs (0.2mM)  
0.15 ul Taq (0.5 U) (Promega)  
0.65 ul M-C273F-FAM (0.43uM)  
0.65 ul M-C273-R (0.43 uM)  
0.45 ul D-C89F-HEX (0.3 uM)  
0.45 ul D-C89-R (0.3 uM)  
0.65 ul O-T159S-FTET (0.43 uM)  
2.0 ul genomic DNA (~25-50 ng)  
4.25 ul water

15 ul total volume

APPENDIX C: Protocols for PCR amplification of six microsatellites , mitochondria control region RFLPs, and sequencing processes for black-tailed deer, Washington state.

a. ***Deer pellet microsatellite PCR amplification California Tetramers (continued)***

i. **Cycling (MJ-100 Thermocycler):**

1. 94C2:00
  2. 92C:30
  3. 55C :30
  4. 72C:30
- repeat steps 2-4 for 35 cycles
5. 72C 4:00
  6. 4C hold

b. ***Deer pellet MtDNA RFLP Protocol***

Primers: Fain and LeMay, unpublished

LTRPROBB13:

5'-CCACTATTAACACCCAAAGC

HSF21:

5'-GTACATGCTTATATGCATGGG

25 ul PCR reaction volume:

2.5 ul 10X PCR reaction buffer

2.0 ul 25mM MgCl<sub>2</sub> (2.0 mM final)

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APPENDIX C: Protocols for PCR amplification of six microsatellites , mitochondria control region RFLPs, and sequencing processes for black-tailed deer, Washington state.

4.0 ul dNTPs (1.25mM stock)  
1.0 ul LTRPROB13 primer (10 uM)  
1.0 ul HSF21 primer (10uM)  
0.4 ul Taq DNA Polymerase  
1-3 ul of genomic DNA  
q.s. H<sub>2</sub>O

*i. MJ-100 Thermocycler Program:*

Step 1 94 C 2:00  
Step 2 92 C :30  
Step 3 53 C :30  
Step 4 72 C :40  
Step 5 Repeat steps 2-4 35 times  
Step 6 72 C 5:00  
Step 7 4 C Hold

*ii. Restriction Enzyme Digestion of PCR products:*

15 ul total reaction volume:

1.5 ul 10X Enzyme Buffer (for Mse I)  
0.5 ul purified BSA (100 mg/ml stock)  
1.0 ul Mse I  
5.0 ul of PCR product from above  
7.0 ul H<sub>2</sub>O  
Digest at 37 C for ~1hr (more is OK)

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APPENDIX C: Protocols for PCR amplification of six microsatellites , mitochondria control region RFLPs, and sequencing processes for black-tailed deer, Washington state.

*iii. Visualization of RFLP Patterns:*

Add 2 ul of GenePhor Loading Dye to 7.5 ul of the above digest.

Load ~7.0 ul on rehydrated GenePhor gel (Amersham-Pharmacia; GeneGel Clean 15/24; catalog #17-6000-13)

Run gel at 600 volts for one hour.

Remove gel and silver stain as per directions.

Air dry gel, and score haplotypes

*iv. GenePhor Loading dye/buffer:*

10 mM Tris

1 mM EDTA

1.25 ml of 1% xylene cyanol (per 25 mls)

10 mg bromophenol blue (per 25 ml)

Adjust pH to 7.5 with acetic acid

Store at 4C

Black-Tailed Deer Reference Animal Tissue Extraction and PCR Protocols

*c. Black-tailed deer tissue 5% Chelex Extraction Suspension*

5 g chelex (BioRad Chelex-100 Resin)

APPENDIX C: Protocols for PCR amplification of six microsatellites , mitochondria control region RFLPs, and sequencing processes for black-tailed deer, Washington state.

0.2% SDS

10 mM tris pH 7.4

0.5 mM EDTA pH 8.0 (0.5 mM final concentration)

sterile de-ionized water to volume

***d. Black-tailed deer tissue microsatellite multiplex #1***

Each locus (\*) is processed separately with the buffer, dNTPs, MgCl<sub>2</sub>, Taq and water, except the gender loci (+), which are processed together. For each individual, all loci are mixed together in a single tube before electrophoresis (i.e., loci are processed separately in the PCR, but multiplexed together in the gel).

10x Promega ® buffer (10mM Tris-HCL (pH 9.0 at 25°C), 50mM KCL, 0.1% TritonX-100) mixed to 1x concentration

|                          |            |
|--------------------------|------------|
| dNTPs                    | 200 µM     |
| MgCl <sub>2</sub>        | 2 mM       |
| *CRSP-1                  | 0.100 µM   |
| *Texan-4                 | 0.075 µM   |
| *RT-5                    | 0.125 µM   |
| +SRY                     | 0.260 µM   |
| +FX/Y                    | 0.100 µM   |
| Promega ® Taq            | 0.05 units |
| Sterile de-ionized water | to 10 µL   |

PCR Protocols

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APPENDIX C: Protocols for PCR amplification of six microsatellites , mitochondria control region RFLPs, and sequencing processes for black-tailed deer, Washington state.

|    |            |       |
|----|------------|-------|
| 1. | 94°C       | 2:00  |
| 2. | 94°C       | 0:30  |
| 3. | 52°C       | 0:30  |
| 4. | 72°C       | 0:30  |
| 5. | repeat 2-4 | 35x   |
| 6. | 72°C       | 30:00 |
| 7. | 4°C        | Hold  |

*a. Black-tailed deer tissue microsatellite multiplex #2*

Each locus (\*) is processed separately with the buffer, dNTPs, MgCl<sub>2</sub>, Taq and water. For each individual, all loci are mixed together in a single tube before electrophoresis (i.e., loci are processed separately in the PCR, but multiplexed together in the gel).

10x Promega ® buffer (10mM Tris-HCL (pH 9.0 at 25°C), 50mM KCL, 0.1% TritonX-100) mixed to 1x concentration

|                          |            |
|--------------------------|------------|
| dNTPs                    | 200 µM     |
| MgCl <sub>2</sub>        | 2 mM       |
| *C-273 (Locus M)         | 0.100 µM   |
| *C-89 (Locus D)          | 0.075 µM   |
| *T-159 (Locus O)         | 0.125 µM   |
| Promega ® Taq            | 0.05 units |
| Sterile de-ionized water | to 10 µL   |

PCR Protocols

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APPENDIX C: Protocols for PCR amplification of six microsatellites , mitochondria control region RFLPs, and sequencing processes for black-tailed deer, Washington state.

|    |            |             |
|----|------------|-------------|
| 1. | 94°C       | 2:00        |
| 2. | 94°C       | <b>0:30</b> |
| 3. | 55°C       | 0:30        |
| 4. | 72°C       | 0:30        |
| 5. | repeat 2-4 | 32x         |
| 6. | 72°C       | 30:00       |
| 7. | 4°C        | hold        |

*a. Black-tailed deer tissue Control Region Sequencing Protocols*

*i. Initial PCR*

10x Promega ® buffer (10mM Tris-HCL (pH 9.0 at 25°C), 50mM KCL, 0.1% TritonX-100) mixed to 1x concentration

|                   |            |
|-------------------|------------|
| DNTPs             | 200 µM     |
| MgCl <sub>2</sub> | 1.5 mM     |
| LOdo1             | 0.4 µM     |
| HOdo2             | 0.4 µM     |
| Promega ® Taq     | 0.15 units |

APPENDIX C: Protocols for PCR amplification of six microsatellites , mitochondria control region RFLPs, and sequencing processes for black-tailed deer, Washington state.

|                          |          |
|--------------------------|----------|
| Sterile de-ionized water | to 15 µL |
|--------------------------|----------|

### PCR Protocols

|    |            |      |
|----|------------|------|
| 1. | 94°C       | 2:00 |
| 2. | 94°C       | 0:30 |
| 3. | 52°C       | 0:45 |
| 4. | 72°C       | 0:45 |
| 5. | repeat 2-4 | 40x  |
| 6. | 72°C       | 5:00 |
| 7. | 4°C        | Hold |

#### i. Sequencing Protocol

Perkin-Elmer Big Dye Terminator Cycle Sequencing kits were used for all sequencing reactions. We followed the manufacturer's recommended protocols for chemistry, PCR and for gel preparation. We sequenced in both directions in separate reactions using the LOdo1 and HOdo1 primers.